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MONTHLY REPORT

OF THE

DEPARTMENT OF AGRICULTURE

FOR

MAY AND JUNE, 1875.



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MONTHLY REPORT.

DEPARTMENT OF AGRICULTURE,
Statistical Division, June 15, 1875.

SIR: I respectfully present for publication a digest of the crop-returns for June, with the results of investigations in the divisions of entomology and chemistry, the current domestic and foreign market-reports, and minor official and other statistics of rural industry.

Respectfully,

J. R. DODGE,
Statistician.

Hon. FREDERICK WATTS,
Commissioner.

DIGEST OF THE CROP-RETURNS FOR JUNE.

WHEAT.

The condition of winter-wheat is still reported low. There has been material improvement in some of the Western States, and Kansas, especially, seems determined to maintain her high reputation as a wheat district. The averages for condition in the winter-wheat district beyond the Alleghanies are as follows: West Virginia, 60; Kentucky, 81; Ohio, 57; Michigan, 80; Indiana, 71; Illinois, 64; Missouri, 55; Kansas, 97. In West Virginia freezes have been followed by drought. Improvement has been marked in Kentucky, but the losses have been too serious to be repaired. In Ohio the remnant still alive is generally late, and in some places has been injured by the fly, chinchies, and by drought. The prospect is better in Michigan than elsewhere between the mountains and the great river. The crop is light and patchy in Indiana, but is improving. The crop of Illinois was too badly injured for more than partial recovery.

In the Gulf States the wheat is a positive success, particularly in Texas, where a large increase in acreage has been made, and where our correspondents insist upon making the condition very high, the average of the percentages of condition being 115. In Arkansas and Tennessee there was some injury from frost, which the genial season has not since repaired.

Going north on the Atlantic coast, the high condition of winter-grain becomes gradually reduced, State by State, until Maryland is reached. Pennsylvania, by its good culture and use of the drill, maintains a higher condition than Maryland. New York succumbs to the severity of winter's frosts, and reports a prospect for scarcely more than half a crop.

The condition of spring-wheat is higher, but is scarcely a full average,

except in Texas, Michigan, and Nebraska. In the Western States the percentages are as follows: Illinois, 91; Wisconsin, 94; Minnesota, 99; Iowa, 97; Missouri, 57; Kansas, 97; Nebraska, 105.

The prospect in California, which was darkened at the last report by the drying winds and absence of the latter rains, has improved somewhat in certain sections from the influence of atmospheric moisture in fogs or dews; yet the injury from drought will materially reduce the expected yield.

The average condition of winter and spring combined is 80 per cent. for the whole country.

The following extracts from correspondence will illustrate some of the exceptional or peculiar features of these returns:

NEW YORK.—*Queens*: Winter-wheat about half killed. No spring-wheat. *Steuben*: Prospect of less than half a crop. *Livingston*: More than half killed in the winter; most of the remainder past saving. *Genesee*: More than half of our extended wheat-area entirely bare of wheat; much of the remaining has only a thin and sickly appearance. *Wyoming*: Winter-wheat looking very bad. Spring-wheat not forward enough to judge. *Jefferson*: Winter-killed where the snow was blown off. *Wayne*: Many fields plowed up and sown with other crops. *Chautauqua*: Winter-wheat will not yield over 5 bushels per acre. *Seneca*: The crop of winter-wheat will be shorter than any within recollection. *Orange*: Injured by winter-killing.

NEW JERSEY.—*Mercer*: Suffered from the severe winter; many fields will not average more than 5 bushels per acre. *Warren*: Will not be more than half a crop. *Gloucester*: Greatly injured by the severe winter, and by the extreme drought now prevailing.

PENNSYLVANIA.—*Bucks*: Nearer a failure than I ever knew; many fields will not more than give back the seed. *Cumberland*: Thriving. *Lehigh*: An average amount of plants, but retarded by the unfavorable season. *Perry*: In low condition owing to the April freeze. *Westmoreland*: Many fields have been plowed up and planted in corn. *Warren*: Looked well early in April, but very much injured since by cold weather. *McKean*: Injured by severe freezing this spring. *Franklin*: Prospects better than in any of the adjoining counties. *Elk*: Late but looks well; 25 per cent. more than usual sown. *Clearfield*: Very materially injured by the late severe freezing. *Armstrong*: Extensively killed; that on new ground generally good. *Columbia*: Stands middling well on the ground, but very much behind time. *Cambria*: Prospect not good. *Indiana*: Some fields plowed up and put in oats and corn; that standing in the ground is doing well. *Lycoming*: On heavy clay-lands, badly frozen out; not so bad on sandy loam, though damaged. *Lancaster*: Winter-wheat rather poor, owing to unfavorable weather during the winter and spring. *Fulton*: Seriously injured by drought in May. *Tioga*: Winter very severe on wheat. *Montour*: Does not look as well as when the snow left. *Beaver*: Winter-wheat very thin.

MARYLAND.—*Cecil*: Very much injured by the winter and by drought. *Prince George's*: But little hope of more than 50 per cent. of a crop one month ago, but now promises 95 per cent. *Baltimore*: That put in early with the drill looks well, notwithstanding the drought; late-sown, miserable. Farmers are sustaining heavy losses owing to late sowing. *Frederick*: Looks bad, but is improving slowly. A great drought prevailing. *Montgomery*: Some very good fields, but the condition for the whole county about 70. *Wicomico*: The Clawson wheat sent out by the Department last fall is now shooting, and looks most promising. *Dorchester*: Fully up to the standard, and promises a full crop. *Talbot*: Suffering severely from drought. *Washington*: Has improved lately, but cannot be over half a crop. *Calvert*: Much destroyed by the intense and long-continued cold, with almost entire absence of snow. *Howard*: Hardly two-thirds of a crop.

VIRGINIA.—*Craig*: Heading very short. *Chesterfield*: The crop the most promising for many years. *Culpeper*: Winter-wheat looking well when sown early, on good, well-prepared ground. *Mecklenburgh*: Considerably injured by frost in April. *Madison*: Greatly injured by cold weather, followed by drought. *Spottsylvania*: Very promising; straw short and heads very fine. *Richland*: Injury threatened by the drought now prevailing. *Fluvanna*: Weather very favorable to the development of the heads. Wheat that had grown to the first and second joint, cut down by the late freeze, sprouted again, and now looks as fine as though it had not been cut by the frost. *Caroline*: Looking quite well. *Tazewell*: Badly damaged by the freeze. *Rappahannock*: Unfavorable weather will cut short late wheat 50 per cent. *Warwick*: As yet but slightly affected with rust. *Sussex*: Fully up to average. *Rockingham*: The crop necessarily short, owing to the severe winter. *Floyd*: Injured by the cold in April, but not so seriously as at first supposed. *Campbell*: A large proportion inferior. *Bland*: Hurt by late frosts. *Frederick*: In some instances, where the natural fertility has been well kept up, the land well cultivated, and the crop sown seasonably, it promises to make 8 to 12 bushels; on other farms of equal natural fertility it will

not be worth harvesting. *Page*: Not making a favorable show. *Pittsylvania*: Some wheat injured by late frosts. *Washington*: Heading very low, and short heads; very dry weather. *Patrick*: The cold in April injured forward wheat. Very dry. *Nelson*: Damaged by the cold in April, but has rallied wonderfully. *Fairfax*: Where drilled early, and on land in good tilth, promise of a full average crop; fields broadcasted and late look badly. *Dinwiddie*: The grain now in the milk, and promises a fair crop. *Cumberland*: Dry weather just as the wheat began to head will cut it short very much. *King George*: Not promising. *Mathews*: Very slightly affected with rust. *Orange*: Seriously affected by backward spring and protracted drought. *Pulaski*: Early stalks entirely killed by the freeze in April; late stools came out finely; now suffering from drought. *Charles City*: A few farms, improved by green clover, plaster, and farm-yard manure, present a very handsome promise of wheat. *Clarke*: Will not be half a crop. *Halifax*: Injured by frost, and now has rust on the blade. *Highland*: Now coming in head and only about 6 inches high, owing to a dry May. *Essex*: Growth small, but heads fine. *Prince George*: Damaged by rust on the blade.

NORTH CAROLINA.—*Chowan*: Injured by late cold weather. *Gaston*: Healthy and promising. *Sylvania*: Damaged by freeze in April, but very much recovered. Four times the usual amount planted. *Surry*: Injured by freeze in April. *Gates*: Very much injured by freeze in April and frosts in May. *Haywood*: An excellent stand of late wheat; early injured by severe freeze in April. Fultz wheat from the Department exceedingly fine. *Ashe*: Somewhat injured by a severe freeze. *Forsyth*: Good. *Franklin*: Has improved and promises well. *Stokes*: Looking well, except symptoms of rust. *Camden*: Injured by rust. *Wake*: Injured by cold and drought. *Alamance*: Improving. *Person*: Prospect never better. *Burke*: Prospects encouraging. *Wilson*: Injured very much by cold in April. *Caldwell*: Much injured by the April freeze and by a five weeks' drought. *Hertford*: The prospect for a good return better than for years. *Montgomery*: The fears that wheat was badly injured by the frosts prove groundless. *Perquimans*: Rust on the leaves. *Anson*: Somewhat injured by frosts. *Alexander*: Injured by severe freeze in spring; what survived is the best for years.

SOUTH CAROLINA.—*Laurens*: Weather favorable for wheat. *Lexington*: Somewhat injured by late frosts and rust. *Edgefield*: Unusually fine.

GEORGIA.—*Columbia*: Ten days back, would have reported wheat 10 per cent. above average; but the rust has taken it, and is spreading like wild-fire. *Gordon*: Early, damaged by frost and overflow. *Rabun*: Never better. *Troup*: Injured some by rust. *Webster*: Injured by rust. *Taylor*: Half already harvested; promises a good yield. *McDuffie*: Never better. *Catoosa*: Looking well, notwithstanding the rust is on the blade. *Chattooga*: Very dry; May favorable to wheat. *Douglas*: Very promising. *Walker*: Badly rusted, which is unusual with dry weather and cool nights. *Garnett*: Light straw; weather favorable for filling and good grain. *Laurens*: Good. *Clayton*: A fair stand on the ground, now beginning to turn, and no appearance of rust. *Coveta*: More than half will be harvested this week. *Floyd*: Has improved wonderfully the last two or three weeks. *Marion*: Spring-wheat being harvested; crop good. *Hancock*: Suffering very much for want of rain. *Heard*: A fine prospect. *Carroll*: Head short but full of large grain; weather most favorable for several seasons. *Upshur*: Good. *Morgan*: Heads rather short, but well filled with grain.

ALABAMA.—*De Kalb*: Short straw and short heads, but well filled. *Franklin*: Exceedingly fine, with a greatly increased area; no appearance of either rust or smut. *Limestone*: Good but very rusty. *Bullock*: Rust, but confined principally to the blade. *Lawrence*: Crop early and unusually good. *Calhoun*: Good; being harvested. *Amite*: Spring-wheat greatly damaged by rust. *Walker*: Now harvesting, and the best crop since the war. *Marion*: Crop as good as last year's, which was better than usual, and acreage 50 per cent. greater; harvest beginning. *Colbert*: As promising as ever known. *Morgan*: Prospect better than for several years.

MISSISSIPPI.—*Noxubee*: Fine; now being harvested. *Winston*: Looking better than for years. *De Soto*: Ripening, and looks splendid. *Tishomingo*: Good, and twice the usual quantity.

LOUISIANA.—*Jackson*: The Fultz and Clawson wheats, from the Department, had put forth large, full heads, when the rust struck and ruined them. Spring-wheat has not been so badly affected by rust, and many fields have turned out good crops. *Bossier*: Entirely ruined by rust.

TEXAS.—*Blanco*: Fall-wheat injured by the drought; spring-wheat promises 20 bushels per acre. *Dallas*: The crop all that could be desired; now being harvested—May 22d. *Upshur*: Fair prospect; no rust as yet. *Collin*: Being harvested; crop very fine. *Wood*: Better than for years before; heads large and full. *Red River*: Nearly ready to cut; prospect good. *Polk*: Has not done well, owing to excessive rains in the winter. *Lamar*: Will yield better than ever before. *Williamson*: Looks very well; the Tappahannock and Red rust-proof Ohio, now cutting, will average from 16 to 30 bushels per acre. Spring-wheat promises equally well. *Navarro*: Nearly all harvested; condition, 150. *Cooke*: Harvest commenced; a heavy yield. *Bosque*: Most of it harvested in good condition; quality good, and acreage and yield larger than usual. *Waller*: Fultz wheat from the Department headed at a height of 30 inches, and was then struck with rust. *Hunt*: Nearly all harvested; Tappa-

hannock ahead of any other variety except the Clawson from the Department, which, for yield, surpasses any other variety ever produced in the county.

ARKANSAS.—*Bradley*: Rust has appeared in almost every wheat-field; very little as yet on the stalk. *Van Buren*: Never better, but, owing to continuous rain for the last ten days, rust has appeared in a few fields. *Montgomery*: Acreage about doubled, and prospect very fine. *Prairie*: Average yield for the county estimated at 20 to 25 bushels per acre. Now beyond damage from any cause save storms. Have seen many specimens ranging from 20 to 82 well-filled heads from a single stool or grain. *Izard*: Some fields entirely winter-killed, and others are too thin; but that standing is good. *Drew*: Four or five times the acreage of any previous year and a most excellent crop. *Dallas*: Harvesting has begun, and the weather is favorable. *Washington*: In some fields almost worthless, owing, apparently, to being pastured too late in the spring; fields not grazed promise above average. *Woodruff*: No wheat raised before this year; some 2,000 acres sown, and promise a good yield. *Baxter*: Better than since the war; will be three bushels this year to one last. *Arkansas*: Generally good. Some complaint of rust, but chiefly in the blade.

TENNESSEE.—*Carter*: Injured by freeze in April, except *Fultz*. Now suffering from drought. *Cameron*: Looks well, but rust appearing on the blade. *Fayette*: A good prospect. *Knox*: No rain for the last five weeks, accounts for the bad condition. The freeze in April nearly destroyed the crop. Rust has appeared in some places. *Hawkins*: Suffering from drought. *Blount*: Cut short by drought. *McMinn*: Has filled well, but the heads very short and some rust on the blades. *Lincoln*: Early wheat injured by the extreme cold in April, but the crop as a whole promises more than average. *Lawrence*: Both winter and spring so damaged by the last crop that not half a crop will be made. *Warren*: Appearance was very fine, but very small heads are putting out. *Rhea*: Good on upland; on river-bottoms and lowland, injured by high water. *Trousdale*: Very promising. *Montgomery*: Healthy, but thin on the ground. *Giles*: Owing to the great scarcity of feed wheat was grazed very close, thus saving it from the late frost. *Wilson*: Looks remarkably well. *Gibson*: Promises an abundant yield. *Washington*: Badly killed by freeze in April. *Sullivan*: Badly injured by the April freeze. *Robertson*: Heading low, but the heads long and fine. *Polk*: Looks dwarfish. *McNairy*: Seemed badly injured by the late frosts, but has come out surprisingly. *Jefferson*: Injured by frost and fly. *Bradley*: Generally, half-crops will not be made. The fly, rust, and freeze have thinned it. *Lauderdale*: Larger acreage and prospect for larger yield than for years. *Grainger*: Much early wheat killed by freezing, and that not killed heading out low, with very short heads. *Dickson*: Injured by frosts.

WEST VIRGINIA.—*Berkeley*: Largely killed by hard winter. *Marion*: Badly winter-killed and cut short by drought. *Monroe*: Looks bad, owing to the freeze in April and severe frosts since. *Pocahontas*: Badly winter-killed. *Jefferson*: The prospect decidedly gloomy. *Wayne*: Suffering from severe drought. *Putnam*: Unpromising. *Grant*: A poor stand. *Harrison*: Prospect for half a crop. *Taylor*: Almost a failure. *Pendleton*: Greatly injured by freezes in April. *Hancock*: Improved by recent rains. *Mercer*: Injured by winter-killing, freezing, and drought. *Upshur*: Will be light.

KENTUCKY.—*Warren*: Acreage more than doubled; promise of much over an average yield. *Oldham*: The plant not on the ground; frozen out in the winter. *Shelby*: Backward and low, owing to cold and dry weather. *Anderson*: Thought to be ruined by the freeze, but has come out amazingly. *Edmonson*: Very much put back by the April freeze, but has recovered and looks very promising. *Harrison*: Has not rallied from the freeze in April, and is now being damaged by the chinch-bug. *Logan*: Has improved very much within the last few weeks. *Mason*: Hope of half a crop. *Breckinridge*: The deficiency in yield will be made up by increased breadth. *Butler*: Thin and low. *Metcalfe*: Looking very bad, owing to cold weather through April and May. *Gallatin*: The prospect gloomy, though now changing for the better. *Greenup*: Suffering from severe drought. *Henry*: Damaged to a greater extent than was supposed a month ago; not more than a half crop expected. *Livingston*: What wheat is left standing will make about two-thirds of a crop. *Callaway*: Too thin, but heading well. *Bracken*: Clawson wheat from the Department very promising; less winter-killed than any other kind. *Meade*: The amount living very small compared with the amount sown. *Monroe*: In bloom and looks well. *Simpson*: On strong land, drilled, looks well; on thin soil, broadcast, worthless.

OHIO.—*Delaware*: Prospect greatly improved since the 15th of May. *Gallia*: Past redemption. *Sandusky*: Improved very much by the rains of May, but injured 40 per cent. by winter-freezing. *Adams*: Has not recovered from the damage by freezing and frosts, and the best left shortened by drought, fly, and chinch. *Fairfield*: What is left is short and late. *Pike*: Badly killed on clay-land; on black loam, looks promising. *Williams*: What is left does not look encouraging. *Jackson*: Has improved some, but cannot be over a half crop. *Warren*: Hardly one-third of a crop. *Coshocton*: Materially injured by winter and spring freezing. *Hancock*: Badly killed and frozen, in April. *Monroe*: Great improvement since the May report. *Hampden*: Winter-wheat looks the best for several years. *Ashland*: Terribly injured by the April freeze. *Crawford*: Injured much by the severe weather in April.

MICHIGAN.—*Barry*: Very fine where there is any, but the fields very spotted. *Mecosta*:

Never more promising. *Washtenaw*: Very badly killed. *Allegan*: Never looked better. *Antrim*: Both winter and spring wheat number one. *Shiawassee*: Prospect of something over half a crop. *Lenauee*: Indications that there will not be as much winter-wheat gathered as sowed; spring-wheat sown largely in excess of former years. *Calhoun*: Do not expect over half a crop. *Athens*: Injured much by winter and spring freezing, followed by drought.

INDIANA.—*Stark*: The few pieces that have survived the winter look well; cannot be over one-third of a crop. *Wells*: Injured by April freeze. *Franklin*: The poorest prospect for four years. *Washington*: Will not make one-half that was sown in the fall. *Bartholomew*: Improving. *Dubois*: What there is looks well, but has fallen off one-half. *Gibson*: Generally thin. *Harrison*: Badly frozen out. *Noble*: Injured in the winter; cannot be more than half a crop. *Perry*: Thin, but looks well. *Wabash*: Prospect poor. *Tippecanoe*: Prospect has considerably improved. *Steuben*: Growing finely. *Shelby*: Very light, but improving very much. *Ripley*: What was not plowed up looks moderately well; fully one-half the acreage was plowed up. *Jennings*: Almost a total failure. *Decatur*: The county will not produce enough for seed; no failure half so bad since the first settling. *Dearborn*: A few pieces promise half a crop, but they will not amount to 1 per cent. of the acreage sown. *Warren*: Looks well in places, on clay-soil. *Vandenburg*: At least 40 per cent. was winter-killed; that left looks remarkably well. *Fayette*: So frozen out that much was plowed up. *Brown*: Many fields a total failure; that drilled looks best. *Fountain*: Favorable weather has made a wonderful improvement in the crop. *Hamilton*: Came out beyond all expectations during May.

ILLINOIS.—*Clark*: Some fields injured by the April freeze, but recent favorable weather has brought it out finely. *Massac*: Not more than one-third of a good stand, but that very good. *St. Clair*: Too much rain to make good wheat. *Shelby*: Winter-wheat anything but encouraging. *Crawford*: Chinch-bugs plenty, and working on the wheat. *Ogle*: Spring-wheat backward, but the prospect good. *Franklin*: Where the ground was highly cultivated and the seed drilled in, it stood the winter and the cold wet spring much better than where sowed broadcast. The heads very short and not well filled. *Boone*: Condition of spring-wheat low, on account of chinch-bugs. *Fulton*: Winter-wheat will not return the seed sown: one-fourth more spring-wheat than usually sown, which looks well. *Jersey*: Mostly very short and thin, and a great deal of cheat with it. *McLean*: Winter-wheat mostly killed; the little left growing finely: very cold and dry weather caused considerable damage to spring-wheat. *Montgomery*: Much better than was expected. *Schuyler*: Winter-wheat all killed on the prairies: a little left on new timber-land: more on bottoms. *Pope*: The four-tenths left on the ground looks healthy and very well, but will be late in ripening, and may yet be destroyed by chinch-bugs. *Kankakee*: Spring-wheat making a splendid growth. *Cook*: Spring-wheat left thin by the April weather. *Vermillion*: Badly injured by late freezing: will make about half a crop. *Alexander*: Very poor: many plowing up the ground sowed. *Mason*: The few fields left will not make half a crop. *Edwards*: Considerably damaged by chinch-bugs. *Cumberland*: Looking well. *Pike*: Winter-wheat almost a failure on hill-lands; winter-killing, dry weather, Hessian fly, and chinch-bugs. *Fayette*: Has improved greatly.

WISCONSIN.—*Dodge*: Winter-wheat looks well, having been sown only in sheltered places. Spring-wheat looks very well, but there is much complaint of chinch-bugs. *Iowa*: Winter-wheat nearly all destroyed by chinch-bugs. *Jefferson*: Chinch-bugs' making sad work with the spring-wheat. *Milwaukee*: Some fields of spring-wheat quite destroyed by chinch-bugs. *Fond du Lac*: Chinch-bugs have commenced their ravages on some pieces of spring-wheat. *Sauk*: A few pieces of wheat have been plowed up, owing to ravages of chinch-bugs; winter-wheat as yet looks splendid, but the roots are completely covered by chinch-bugs, laying their eggs.

MINNESOTA.—*Wright*: The deficiency in the acreage of spring-wheat is owing to fear that grasshoppers would destroy the crop. In some parts of the country they are now very numerous, and threaten to destroy all before them. *Isanti*: Spring-wheat very much stunted by drought. *Winona*: Decidedly good in the western half of the county. *Sibley*: One-half already destroyed by grasshoppers. *Crawford*: Good prospect for a big yield. *Chippewa*: Spring-wheat, our staple crop, is looking well, but in some fields the grasshoppers have hatched out and are eating the young blades.

IOWA.—*Van Buren*: Winter-wheat nearly a failure. *Hardin*: Very thin. *Harrison*: Hardly more than half as much sown as last spring, but three times as much standing now as the grasshoppers left them. No grasshoppers' eggs here now. *Howard*: Early sown came in patches; later-sown, regular and promising. *Washington*: Injured by drought for the last six weeks. *Buena Vista*: The little winter-wheat there was, killed, freezing and thawing in April. *Des Moines*: Will not be one bushel of winter-wheat raised where fifteen were sown. Spring wheat very thin; not over one-fourth of a stand in some fields. *Jefferson*: Winter wheat almost wholly winter-killed. Spring, damaged by late frosts and dry weather. *Muscatine*: Injured by drought. *Louisa*: Winter-wheat entirely killed.

MISSOURI.—*Bates*: The cold winter killed nearly all. *Lawrence*: Looked fine till May, when the Hessian fly took about all except the Fultz and weevil-proof. *Montgomery*: No end to chinch-bugs; most of the wheat sown in the fall has been plowed up. *Saint Genevieve*: Uncommonly fine until May 20th, when the army-worm appeared in force, and is

now rapidly devouring it, in some cases cutting the heads entirely off. *Schnyder*: Looks well. *Calloway*: Badly winter-killed, and the chinchies at work on what is left. *Crawford*: A little late and chinchies numerous. *Dallas*: Injured in some places by the Hessian fly. *Hickory*: The chinchies quite numerous, but not yet doing much damage, owing to wet weather. *Dent*: Our only hope for wheat is in the red varieties, particularly the "Red May." Tappahannock almost a failure. Last fall I turned under 20 acres of meadow, which had been run in timothy seven years, and sowed it in Tappahannock, the seed being perfectly free from cheat, rye, &c. It came up and grew finely, giving every indication of a plentiful crop. Now at least 75 per cent. of it is cheat. In other fields adjoining is the same kind of wheat, and no cheat. Would like to know the cause of the cheat. *Jasper*: Grasshoppers and chinchies doing no damage as yet. *Moniteau*: Chinchies more numerous than ever, but thus far kept from serious damage by frequent showers. *Iron*: Chinchies commencing their ravages. *Greene*: Promised a large yield up to the 1st of May; since then the Hessian fly has destroyed a large number of fields; most destructive to early-sown; that sown in November but little affected. *Boone*: Never before in the county have the depredations of insects been so terrible—chinchies, cut-worms, army-worms, and grasshoppers; many wheat-fields eaten up by chinchies. *Perry*: Has improved rapidly during the last month, and were it not for the army-worm appearing in great numbers, it might be put at an average. *Stoddard*: Nearly doubled in acreage, and in good condition. *Bolivar*: A total failure feared, chinchies being more than numerous. *Vernon*: Grasshoppers have entirely destroyed all growing crops in part of the county, and done injury in the whole. Chinchies more plentiful than ever before, but kept from damage as yet by rains. *Caldwell*: The stand of winter-wheat very poor, and what is left full of chinchies. *Franklin*: In exposed localities a total failure from frosts; in sheltered valleys will be average if the chinchies keep off. *Jefferson*: Will be a third of a crop. *Macon*: All killed; not 50 acres left. *Miller*: The Tappahannock and Fultz, from the Department, looking finely; the Touzelle not doing much; too late for this county. *Platte*: Three weeks ago wheat promised a splendid harvest, but the grasshoppers are upon us more numerous than ever before, and our crops entirely destroyed. *Maries*: Will be light. Many have plowed up, and others pasture. *Clay*: Little left by the grasshoppers. *Henry*: The great loss is from ravages by chinch-bugs and grasshoppers. *Nodaway*: A large amount of winter-wheat plowed up on account of chess or cheat. Considerable damage by chinchies and Hessian fly. *Dade*: The Hessian fly has made sad havoc of the growing wheat. *Laclede*: Not over half a crop; much winter-killed, and the remainder injured by the fly. *Pettis*: At least one-third frozen out, and the chinch-bugs have appeared by the million.

KANSAS.—*Allen*: Except some of the uplands, the county stripped of wheat by the grasshoppers. *Chase*: As we are near the eastern line of total destruction by grasshoppers last year, we are now entirely escaping their ravages, and the prospect for winter-wheat as fine as ever seen. *Doniphan*: Grasshoppers the only crop flourishing. *Nemaha*: Injured by young grasshoppers, which are now at work. *Brown*: Grasshoppers the cause of low condition. *Cherokee*: Condition, aside from grasshoppers, would be 95; reduced by them in some places as low as 20. *Crawford*: Injured by grasshoppers. *Greenwood*: Could scarcely be a better prospect for a crop of winter-wheat. *Lyon*: Much killed by the dry weather in March. Ravages by grasshoppers as yet confined to a small area. Chinchies reported, but no damage as yet. *Montgomery*: Winter-wheat looking remarkably well; never better. The grasshoppers now flying, and hopes entertained that they will leave before doing serious damage. *Rice*: Never better; no grasshoppers worth mentioning. *Washington*: Best prospect for years; no grasshoppers, and no damage by chinchies. *Anderson*: Less sown than ever before, on account of ravages by chinchies last year, and hundreds of acres are entirely cleaned out by grasshoppers. *Franklin*: Largely destroyed by grasshoppers. *Jackson*: Looked well up to the last week in May. Since then the grasshoppers have commenced their ravages. *Atchison*: Greatly damaged by grasshoppers. *Neosho*: Most of the wheat destroyed by grasshoppers. *Jefferson*: Nearly all late-sown winter-wheat killed by the severe cold; grasshoppers at work on what is left. They have eaten nearly all the spring-wheat. *Republic*: Never since 1869 a promise of so large a yield; but the young grasshoppers are at work. *Douglas*: The grasshoppers have already entirely destroyed 25 per cent. *Marshall*: Destroyed by grasshoppers. *Butler*: Chinchies doing much damage on high land; no grasshoppers. *Graham*: Spring-wheat looking fine. *Leavenworth*: All destroyed by grasshoppers. *Miami*: All destroyed by grasshoppers. *Osage*: Badly damaged by frosts, and worse by young grasshoppers. *Cowley*: Looks fine. *Wabunsee*: Very much injured, and a prospect of being wholly destroyed by grasshoppers. *Labette*: One-third of the county already devastated by grasshoppers. Wheat one month ago 100; now down to 88.

NEBRASKA.—*Pawnee*: About 20 per cent. taken by the small grasshoppers, which are still at work. *Otoe*: The cold and snowless winter destroyed most of the winter-wheat. The grasshoppers have already taken a large share of the spring-wheat, and are rapidly destroying the remainder. *Boone*: Winter-wheat entirely lost by the hard winter and spring. Spring-wheat looking very fine. *Richardson*: The grasshoppers have made a clean sweep of everything green. *Jefferson*: Looks well; but the grasshoppers have done

some damage, and more is feared. *Thayer*: Prospect never better; no grasshoppers to speak of.

CALIFORNIA.—*San Joaquin*: Injured the first part of April by a cold wave. No rain since February. *Alameda*: The severe drought since the 1st of February with hot north winds has injured all grain-crops very much. Large breadths of wheat have been cut for hay to save it. *Contra Costa*: The promise, until the 1st of April, was never excelled. Then the entire failure of the usual spring-rains and the setting in of desiccating winds from the north begin to tell on sandy soils and on lands poorly cultivated. *Merced*: Think the Clawson wheat sent me by the Department will surpass any variety in yield I have ever seen. *Stanislaus*: The fields very spotted, owing to drought.

OREGON.—*Lynn*: The best prospect for both fall and spring wheat that I have seen for twenty-one years. *Umatilla*: Never looked better.

COLORADO.—*El Paso*: Spring-wheat deficient, owing to grasshoppers.

UTAH.—*San Pete*: Both winter and spring wheat promise well. *Morgan*: Injured on low lands by frost on 26th of May.

NEW MEXICO.—*Taos*: Looks bad, owing to frosts.

DAKOTA.—*Darison*: Never saw better-looking. *Lincoln*: Never looked better.

COTTON.

In a larger portion of the cotton area, at the usual time for planting, the soil was wet and cold in Atlantic coast districts, and in a less degree in more western areas, and germination was retarded, but not destroyed. Afterward, the weather became favorable for growth and the chopping out process, with a tendency in places to an injurious lack of moisture. A frost on the 19th of May, in North Carolina, destroyed cotton on certain swamp-lands. Late frosts were somewhat injurious in all the States except Florida and Texas.

The stand is much better than that of last year, and the plants more advanced in growth, notwithstanding their late start; and the crop is generally quite clean. No serious injury has been done by insects, though the cut-worm is noticed in some counties of Florida, Texas and Arkansas; the plant has been infested with lice in some fields in Florida.

The threatened reduction in area has not been accomplished. While there has been an increase in corn and wheat, it has not been at the expense of cotton. Nor has the reduced area of last year been much enlarged. Our returns make only 1 to 2 per cent. increase. There is only one State (Georgia) which has an official bureau for the collection of crop-statistics, which makes the reduction of acreage 5 per cent., which is within 1 per cent. of the result returned by our own corps in that State. The comparison with last year is as follows: North Carolina, 102; South Carolina, 106; Georgia, 96; Florida, 99; Alabama, 104; Mississippi, 102; Louisiana, 101; Texas, 108; Arkansas, 101; Tennessee, 92.

The maximum June condition of cotton, for a period of five seasons, was reported in 1872. The order for the other four is 1875, 1873, 1871, 1874. The comparison with a crop of full vitality and normal growth in all respects is for the present month as follows: North Carolina, 92; South Carolina, 97; Georgia, 91; Florida, 94; Alabama, 101; Mississippi, 100; Louisiana, 95; Texas, 96; Arkansas, 90; Tennessee, 99.

An investigation has been undertaken for the correction of the basis of area in cotton in vogue for years past. The statistician has for years had strong reasons for believing the area heretofore reported in cotton to have been too small. For the past two years he has had a demonstration of that belief, and has not printed an estimate since 1873. The figures published in all the commercial journals are those originally returned by our correspondents, with annual modifications in accordance with yearly percentages of increase or decrease. There are extant no other systematic data for obtaining the acreage; there is otherwise, in

fact, nothing but individual guessing from personal observation or desultory facts. Now the difficulty is this: In estimating average rates of yield per acre of any crop whatever, farmers almost invariably assume too high a figure; whether from pride in the reputation of their neighborhood for fertility and good culture, or from the controlling impression made upon their minds by the appearance of the best fields. On the contrary, with reference to comparative aggregates of yield, to an inquiry whether the total area in a given crop is greater or less, or the harvest better or worse than usual, their judgment is usually accurate. If there is any bias, it will be likely to be in the direction of an underestimate. These general facts will be acknowledged by all who have any practical knowledge of crop-statistics; they have been effectually attested by the experience of the past ten years of this Department. This being the case, all our estimates of yield per acre are now made, not alone from the direct estimate of yield of counties of all crops, but after harmonizing results of reported local changes in the rate of yield and in comparative aggregate of production.

With regard to cotton, we have obtained an actual census, wherever it was possible, for a given district, whether a large or a small portion of a county, both of bales produced and the number of acres upon which they were grown. Our correspondents were urged to avoid estimates, and give only ascertained facts. So a census of a few farms would be taken here, a neighborhood there, and occasionally a larger district. The local officers were in some instances enlisted in the work. The results are not complete, and are not deemed quite sufficient for an authoritative estimate which can be relied on, in the future, as a perfectly accurate basis of comparison; yet they are too important to be withheld, and will be received by a fair-minded public as the best known data for an approximate estimate of the real area in cotton.

In the following statement the number of counties are given in which such enumerations were made, either for their total or partial area, respectively, with the number of bales produced on the acreage given, in 1874:

States.	Counties.	Bales.	Acres.	Acres to the bale.
North Carolina.....	12	70,402	202,412	2.87
South Carolina.....	9	84,249	271,477	3.21
Georgia.....	41	199,810	707,187	3.54
Florida.....	6	17,513	67,751	3.86
Alabama.....	13	62,534	245,094	3.92
Mississippi.....	12	105,280	395,060	2.92
Louisiana.....	6	56,450	124,016	2.19
Texas.....	38	139,762	404,005	2.89
Arkansas.....	13	49,544	140,690	2.84
Tennessee.....	11	25,654	83,934	3.27
Total.....	.....	811,198	2,554,626	3.15

This makes the average in over 40 per cent. of the cotton-breadth of Georgia, 3.54 acres per bale, while the official report of the State of Georgia makes the number $3\frac{1}{2}$ acres—results almost exactly alike, as in the reports of the area of the present crop.

Without perfecting these estimates, it is evident that the true acreage of 1874 cannot fall very much short of three times as many acres as were produced of bales in 1874, or at least 11,000,000 acres, possibly a figure a little larger. This corresponds with the mass of facts brought to our observation annually for two years past.

In connection with the investigation to fix the basis of area, preliminary returns relative to the present crop were received. A synopsis of those received after the middle of May is as follows:

During May preliminary returns were received from 316 cotton counties. The season is reported late in nearly every instance, from ten days to two weeks generally, but in some cases three and even four weeks. More than two-thirds of the returns make the season too wet, especially in time of planting and germinating. In some districts the past two weeks have been too dry. The stand is reported good in a majority of the returns from North Carolina, South Carolina, Florida, Alabama, Mississippi, and Texas, rather above the average in Arkansas and Tennessee, and scarcely average in Louisiana. The condition is represented below average in Florida, Tennessee, and Arkansas, slightly below in Georgia, Mississippi, Louisiana, and Texas, and average in Alabama and in the Carolinas.

The following brief extracts are from the correspondence of the present month:

VIRGINIA.—*Greenville*: A good stand, but very backward.

NORTH CAROLINA.—*Gaston*: About all up; a few fields in fine order; the stand generally good, but a large per cent. backward. *Gates*: Now up, but looks sick. *Columbus*: Seriously injured by frosts. *Franklin*: Stand fair; farmers busy in "chopping." *Lincoln*: Checked by dry weather and cold nights. *Wayne*: Late, but the appearance superior to that of last year. *Camden*: Stand good. *Mecklenburgh*: The stand very good; more fertilizers used than last year. *Pamlico*: Frost, May 19, killed all the cotton on loose swamplands. *Wake*: Stand injured by cold and dry weather; rapidly recovering. *Alamance*: Looks badly. *Edgecombe*: Generally the stand is very good. *Duplin*: Planting retarded ten days by bad weather; that planted before May came up promptly and looking unusually well. It was too dry, until the 25th, for that planted later to germinate; at least one-half in the county just coming up; stand unusually good. *Wilson*: The stand not good, and the plant small. *Onslow*: Stand not good. *Perquimans*: Fair stand, but backward, and looks much worse than usual. *Anson*: Two to four weeks late.

SOUTH CAROLINA.—*Georgetown*: Good stand, and growing. *Orangeburgh*: Two or three weeks late. *Edgefield*: Indifferent stand, but, according to an old adage, half a stand will yield a full crop. *Greenville*: Last year the rule was, "cotton-fields and corn-patches;" this year, "corn-fields and cotton-patches." *Union*: A remarkably wet and cold spring seriously retarded the planting and growth, rendering it "possum-eared;" now suffering for rain; stand generally good, but deficient in all red lands. *Newberry*: Stand generally good, but two weeks backward. *Barnwell*: More promising than usual. *Laurens*: Early planted, small and dying; late, not yet up to a good stand. *Lexington*: Late good stand, and growing finely. *Darlington*: Good stand and doing well.

GEORGIA.—*Columbia*: Looking well in some localities; in others, sickly. *Muscogee*: Very small, stand imperfect; two weeks late. *Randolph*: Much killed by the frosts. *Troup*: Never saw a better prospect. *Wilkinson*: Planting unusually late, owing to rains. *Webster*: Small, but healthy, and good stand. *McDuffie*: Dry weather prevents the cotton from coming up in stiff clay-lands; twenty days later than in any spring for thirty years. *Douglas*: Area planted equals that of last year, which was 10 to 12 per cent. below average. *Walker*: A good stand, but late, and very small. *Gwinnett*: Good stand, and fair prospect. *Hart*: Stand good, but very small. *Laurens*: Very small, and not healthy. *Clayton*: A fair stand; most of the farmers have it chopped. *Covetta*: Excellent promise. *Marlborough*: Plants very small, but healthy. *Floyd*: A dry May; late planted failed to come up; stand poor. *Putnam*: May a first-rate month for cotton. *Hancock*: Very backward, owing to late spring and excessively dry weather. *Cherokee*: Kept back by extremely dry weather. *Carroll*: Much killed by cold nights, and that standing looks badly. *Lincoln*: Small; no rain in May. *Upshur*: Two to three weeks late, but good stand and fine prospect. *Pulaski*: Good stand, but two weeks late.

FLORIDA.—*Jackson*: Complaints of cut-worms and a bad stand, but has grown finely the last ten days. *Gadsden*: Two weeks late, but healthy and vigorous. *Columbia*: Looking bad; too cool and wet. *Leon*: Has suffered from lice, but is doing well. *Suwannee*: Very backward and defective in stand, owing to late wet spring. Much injured by cotton-lice.

ALABAMA.—*Hale*: Small but good stand and usually free from grass. *Saint Clair*: A fair stand. *Clarke*: Stand good; rain badly needed. *Montgomery*: Clean cultured; good size and with a fair show of fruit-forms. *Franklin*: Looks wonderfully well. *Lawrence*: A month behind, but the plants vigorous and growing. *Concuh*: Very clear from grass; prospect never better. *Waller*: Small but in good condition. *Wilcox*: Favorable weather

for cotton. *Marion*: Better stand than last year, and more forward. *Colbert*: As promising as ever known. *Winslow*: Very promising. *Dallas*: Good stand and favorable season.

MISSISSIPPI.—*Pike*: Injured by cold nights in April and May. *Marion*: Backward, owing to cool nights. *Wilkinson*: Early planted all killed by cold; replanted. *Coahoma*: Recent rains have improved the condition. *Noxubee*: Small but in fine condition. *Kemper*: In good growing order. *De Soto*: Late but good stand and growing finely. *Clark*: Good stand and well worked. *Adams*: Stand good and looking very healthy. *Holmes*: In many places dying out from the effects of cold nights and lice. *Jefferson*: Stand not good in early planted; in later, good and growing finely.

LOUISIANA.—*East Baton Rouge*: Damaged very seriously by wet weather and late frosts; many plowed up and replanted. *Franklin*: Three to four weeks late; looks tolerably well. *Richland*: Late. *Union*: More backward than ever known. *Washington*: Owing to much cold weather, the stand very poor and the plants dwarfish and sickly. *Madison*: Stand good. Hurt to some extent by lice. *Concordia*: Stand defective. *West Feliciana*: Better stand than last year, but smaller. *Jackson*: Not so large as usual, but the condition entirely satisfactory. *East Feliciana*: The crop curtailed about one-fourth, and corn, oats, and forage-crops planted instead. *Blanco*: Doing well. *Harrison*: Looks very fine.

ARKANSAS.—*Bradley*: Late; good stand and looks well. *Craighead*: A few weeks later than I have seen for the last seventy-five years. *Hempstead*: The finest prospect for years. *Saint Francis*: Looking well, but cut-worms have injured the stand 10 per cent. *Prairie*: The cut-worm has ruined 2 per cent. of the cotton planted; excellent stands. *Lard*: Owing to the cold, wet spring much seed rotted in the ground, and that standing is unusually small and feeble. The cut-worms are making sad havoc. *Dallas*: Looks unusually healthy and strong. *Scott*: The damage by cut-worms has been terrible; many have planted the second time, and some even the third. *Sharp*: Damaged very materially by cut-worms. *Boone*: At least 50 per cent. cut down by cut-worms. *Ashley*: Stands not so good as last year, but the condition better.

TENNESSEE.—*Fayette*: A little late, but in good thrifty condition. *Lincoln*: The plant very small and backward, but looks healthy. *McNairy*: Came up badly and is remarkably small. *Lauderdale*: Better stand and more promising than last year. *Gibson*: A good stand and doing well.

TEXAS.—*Lavaca*: Two weeks late. *Dallas*: Owing to the late cold spring, the stands very sorry; many have had to plant over. *Titus*: The large increase in acreage in cotton and other farm-crops, owing to the rapid settling of the county. *Washington*: Looks quite promising. *Bandera*: Some fields entirely destroyed by cut-worms. *Collin*: Slow in coming up, owing to dry weather; a fair stand; one-third of the farmers abandoning cotton for grain. *Wood*: Somewhat late, but in fine condition. *Wilson*: Was doing well until last week, when the web-worm made its appearance in many places; they have already done great damage. *Red River*: Up well; good stands; prospect of a heavy crop. *Rusk*: Brought forward finely by favorable weather in May. *Matagorda*: Failure in stands in many places; some planted over. *Polk*: The plant generally healthy. *Montgomery*: Never looked better. *Lamar*: Prospect never better. *Anderson*: Condition unusually good. *DeWitt*: Prospect never better. *Henderson*: Bad stands owing to cold spring. *Cooke*: Very small, but now thriving. *Bexar*: Two weeks late; good stand. *Angelina*: A great deal better than last year. *Bosque*: Great complaint of cut-worms, drought and cool nights. *Waller*: Many planters used damaged seed, which gave bad stands. *Shelby*: Very backward, owing to cold spring; many fields replanted. *Hunt*: Late and not more than half a stand in the larger part of the county. *Gillespie*: Injured by drought, but since rain growing rapidly. *Austin*: Late, but worked clean and doing well.

RYE.

The condition of rye is much higher than that of wheat, yet only eight States reach a full average, viz: Maine, New Hampshire, Florida, Alabama, Mississippi, Texas, Arkansas, and Kansas. Average for the central western basin, 86 per cent.

RHODE ISLAND.—*Kent*: Suffered severely in consequence of ice.

NEW YORK.—*Orange*: Damaged by winter-killing.

NEW JERSEY.—*Mercer*: Suffered from the severe winter. Many fields will not average more than 5 bushels per acre.

PENNSYLVANIA.—*Cumberland*: Shorter than usual, yet appears well. *Lehigh*: Average of plants, but retarded by the unfavorable season. *Perry*: The low condition owing to the April freeze. *Warren*: Early in April looked well, but much injured since by cold weather. *Clearfield*: Very materially injured by late freezing. *Lancaster*: Very backward; just coming into heads. *Fulton*: Seriously injured by drought in May. *Jefferson*: Winter-killed where the snow was blown off.

MARYLAND.—*Dorchester*: Promises a full crop. *Howard*: Not more than two-thirds of a crop.

VIRGINIA.—*Campbell*: Rye-culture not extensive but increasing. A quart of seed sent

from the Department in the fall of 1873 yielded about three bushels. That from seed sent last fall is doing well.

NORTH CAROLINA.—*Surry*: Injured by freeze in April. *Wake*: Injured by cold and drought.

GEORGIA.—*Rabun*: Very promising. *Catoosa*: Winter-rye from the Department looking very nice, though the rust is on the blades.

MISSISSIPPI.—Scarcely ever fails in this county; a full crop. *Wilkinson*: Winter-rye nearly all destroyed by rust.

TEXAS.—*Collin*: Winter-rye from the Department a week later than the common, but the heads are larger and very fine. *Lamar*: Will yield better than ever before.

ARKANSAS.—*Prairie*: Wheat extraordinary, and rye, if anything, better. *Izard*: Very little in the county, but that is good. *Arkansas*: Six feet high, and over; very good.

TENNESSEE.—Looks well, but not much raised.

WEST VIRGINIA.—*Pendleton*: Greatly injured by freezes in April.

KENTUCKY.—*Oldham*: Frozen out in winter. *Lincoln*: Was pastured late, for want of feed, and does not look so well on that account.

OHIO.—*Crawford*: Much injured by the severe weather in April.

MICHIGAN.—*Allegan*: Never looked better.

IOWA.—*Des Moines*: Winter-rye damaged more than ever before by the cold and dry weather in April. *Jefferson*: Damaged in winter.

MISSOURI.—*Bates*: The dry fall and cold winter killed nearly all. *Jefferson*: Unusually good. *Platte*: Promised a splendid harvest, but already destroyed by grasshoppers.

KANSAS.—*Allen*: Mostly taken by the grasshoppers. *Brown*: Grasshoppers the cause of low condition. *Washington*: Best prospect for years. *Jackson*: Looked well up to last week: since then the grasshoppers have commenced ravages. *Jefferson*: The reduced condition owing to ravages by grasshoppers. *Leavenworth*: Destroyed by grasshoppers.

NEBRASKA.—*Pawnee*: Grasshoppers have taken 20 per cent., and are still at work. *Boone*: Seemed to stand the freezing and thawing much better than wheat. *Cass*: Cut short one-fourth by grasshoppers. *Thayer*: Looking splendid.

OATS.

The breadth of oats is slightly increased. The comparative area of some of the largest States is as follows: New York, 105; Pennsylvania, 99; Ohio, 98; Michigan, 100; Indiana, 104; Illinois, 105; Missouri, 103. In New York and New Jersey this crop has replaced winter-killed wheat to some extent; and in the West the area has been similarly enlarged.

NEW YORK.—*Queens*: Look well. *Genesee*: Acreage increased, from the wheat area. *Wyoming*: More than usual being sown; coming up well. *Rockland*: Suffering from drought. *Orange*: Materially injured by drought prevailing through May.

NEW JERSEY.—*Warren*: Acreage increased by sowing in place of wheat plowed up. Stand short on account of late sowing and protracted drought.

PENNSYLVANIA.—*Bucks*: Started badly, owing to drought. *Perry*: Low condition, owing to late spring and drought. *Lycoming*: Very backward, owing to cold and very dry weather in May. *Lancaster*: Very backward. *Berks*: Very backward, owing to drought.

MARYLAND.—*Baltimore*: Exceedingly backward and suffering for rain. *Montgomery*: Will be a failure. *Wicomico*: Acreage smaller than usual, owing to the late spring. *Dorchester*: Look poorly, owing to the backward season. *Cecil*: Very much injured by drought.

VIRGINIA.—*Flucanna*: Weather very favorable for the crops. *Bedford*: Seriously damaged by protracted dry weather. *Augusta*: Injured by hard freeze about the 1st of May, and now suffering from drought. *Highland*: The poorest show I have ever seen. *Amelia*: Farmers think they will not reap the seed sown. *Caroline*: Very late, but may make a fair crop. *Tazewell*: Looking very badly. *Rappahannock*: Will be cut short 50 per cent. by unfavorable weather in May. *Sussex*: A greater acreage than usual, but 5 per cent. below average. *Campbell*: Well-nigh destroyed by the cold and drought. *Bland*: Nearly ruined by the dry weather. *Pittsylvania*: Greatly affected by late spring and unfavorable weather. *Washington*: The worst prospect ever seen. *Dinwiddie*: Late spring and scarcity of seed reduced the area; look badly. *Cumberland*: Suffering very much for rain. *Henrico*: Winter-oats, average; spring, scarcely. *Orange*: Seriously affected by late spring and protracted drought. *Pulaski*: Will be an entire failure without rain soon. *Clarke*: Will be an entire failure. *Craig*: Cannot make more than half a crop. *Chesterfield*: Winter-oats badly killed, but branching finely; spring-oats look bad. *Greenville*: Will be a failure without rain soon. *Mecklenburg*: Injured by frost in April. *Madison*: Very small and indifferent. *Spottsylvania*: No growth. *Prince Edward*: Very backward. *King* and *Queen*: Poorer than for many years.

NORTH CAROLINA.—*Chowan*: Injured by late cold weather. *Gaston*: Healthy and promising. *Gates*: Spring-oats very much damaged by frosts in May. *Ashe*: Injured to some extent by a severe freeze. *Forsyth*: Very small. *Stokes*: Unusually late. *Cam-*

den: Winter-oats good. *Pamlico*: Injured by frost May 19. *Wake*: Injured by cold and drought. *Wilson*: Look better than wheat. *Caldwell*: A failure, owing to drought. *Hertford*: Unpromising, from cold and dry weather. *Alexander*: Suffering from drought.

SOUTH CAROLINA.—*Union*: Hopeless failure, caused by drought. *Newberry*: Unusually promising. *Edgefield*: Unusually fine.

GEORGIA.—*Gordon*: Short for want of rain. *Troup*: Spring-oats injured by dry weather; winter-oats fine. *Webster*: Good. *McDuffie*: Suffering for rain. *Chattooga*: Very dry May; likely to cut off oats sown in the spring. *Walker*: Spring-oats almost cut off by dry weather. *Laurens*: Good. *Clayton*: Have suffered materially for rain. *Coweta*: Considerably injured by dry weather. *Floyd*: Spring-oats on thin land will be almost a total failure. *Wilkes*: Fall oats, fine, but spring too low for want of rain. *Hancock*: Suffering from drought. *Carroll*: Injured by dry weather. *Lincoln*: Spring-oats almost a failure; no rain in May. *Pulaski*: Cut short by four weeks' drought.

FLORIDA.—*Gadsden*: The harvesting completed and the yield very satisfactory. *Columbia*: Harvested; injured 20 per cent. by rust. *Leon*: Most of the crop harvested; some varieties rusted. *Surannee*: Much injured by what is known as rust, but believed, by some planters, to be caused by a small greenish or whitish bug, always found on the oats when attacked by rust.

ALABAMA.—*Corvinton*: Rust has appeared, not yet general, but sufficient to seriously lessen the crop. *DeKalb*: Retarded by dry, cool weather. *Madison*: Injured by drought. *Bullock*: Suffering greatly for rain. *Lawrence*: Good. *Calhoun*: Very poor, owing to drought. *Perry*: Greatly injured by the dry May.

MISSISSIPPI.—*Pike*: The growth never more luxuriant and healthy. *Wilkinson*: The increase of acreage (200 per cent.) is noteworthy. The Sandy, Somerset, and White Schonen oats from the Department, utterly destroyed by rust, while the Mississippi red rust-proofs are perfectly healthy. *Smith*: As fine as ever known. *Noxubee*: Winter-oats very fine; spring, hardly worth cutting. *Rankin*: An excellent crop of fall-sown being harvested; spring-sown almost a failure from drought.

LOUISIANA.—*Jackson*: Oats from seed from the Department have proved a decided success.

TEXAS.—*Uvalde*: The White Schonen oats improve; the Somerset is doing well. *Upshur*: No rust up to this time. *Red River*: Very fine. *Rusk*: Fall-oats were killed last winter; spring-oats not so good as usual. *Lamar*: Will yield better than ever before. *Williamson*: The crop promises 40 to 80 bushels per acre: The acreage four times greater than ever before. *De Witt*: Those who have sown the anti-rust oats have succeeded admirably. *Henderson*: Good. *Cooke*: Very short, owing to a drought in May. *Bezar*: Never better; yield of some fields estimated at 80 bushels per acre. The red oat the only variety which never rusts here. *Bosque*: Much larger acreage than usual, but damaged by frost and drought. *Waller*: Red rust-proof oats from the Department a success; free from rust. *Blanco*: Will yield about 30 bushels per acre.

ARKANSAS.—*Van Buren*: Extra; promise a large yield. *Izard*: Never more promising. *Benton*: Looking very fine.

TENNESSEE.—*Carter*: Almost a total failure, owing to protracted drought. *Knox*: The low condition is owing to a drought of five weeks. *Sevier*: Will be a failure without rain soon. *Hawkins*: Suffering from drought. *Blount*: Look like an entire failure, owing to drought. *Rhea*: Short; no rain since April. *Wilson*: Excellent. *Washington*: Look very bad, owing to cold and subsequent dry weather. *Sullivan*: Damaged too much to make anything like an average crop. *Polk*: Look dwarfish. *Grainger*: Very short.

WEST VIRGINIA.—*Pocahontas*: Late and dwarfed by dry weather. *Wayne*: Suffering from severe drought. *Cabell*: Suffering from drought. *Grant*: A poor stand. *Pendleton*: Greatly injured by freezes in April. *Hancock*: Improved by recent rains.

KENTUCKY.—*Shelby*: Backward and low, owing to cold, dry weather. *Anderson*: At best will be short and very inferior, owing to severe drought. *Boyle*: Almost beyond redemption, from drought. *Jessamine*: An entire failure threatened by drought. *Butler*: Very thin and low. *Lincoln*: Not promising. *Metcalf*: Looking very bad, owing to the cold weather through April and May. *Gallatin*: Promising a good crop. *Greenup*: Will be almost a total failure, from drought. *Henry*: Short, and suffering for rain. *Callaway*: Small crop. *Coshocton*: Early sown; injured by late frosts and drought. *Erie*: Prospect of fair crop. *Meade*: Looks bad.

OHIO.—*Delaware*: A very large acreage, with more than average prospect. *Adams*: Did not come up well; coming forward very slowly.

MICHIGAN.—*Mecosta*: Looking well. *Allegan*: Planted late, but look well.

INDIANA.—*Franklin*: Injured by severe freeze in April, and by dry weather. *Gibson*: Backward, but growing fast. *Harrison*: Very late, and do not improve well. *Steuben*: Look well. *Brown*: Very backward and short.

ILLINOIS.—*Ogle*: Promising. *Putnam*: Damaged by the freeze, which makes the early-sown thin. *McLean*: The early-sown damaged by cold, and dry weather; some fields plowed up. *Kankakee*: A little damaged by the freeze in April, but now making a splendid growth. *Cook*: Badly injured in April. *Mason*: Look well. *Edwards*: Some damaged by chinchies. *Pike*: Weather too dry. *Fayette*: Small acreage, owing to scarcity of seed.

MINNESOTA.—*Isanti*: Very much stunted by drought. *Winona*: Decidedly good in the western half of the county. *Sibley*: One-half already destroyed by grasshoppers.

IOWA.—*Hardin*: Very thin on the ground. *Howard*: Those sown before the 17th of April perished by the freezing of the ground $4\frac{1}{2}$ inches deep; those sown after that look well. *Washington*: Injured by drought for the last six weeks. *Des Moines*: Very thin on the ground. *Muscatine*: Injured by drought.

MISSOURI.—*Davies*: Doing well. *Saint Genevieve*: Being rapidly devoured by the army-worm. *Callaway*: Look well; chinch-bugs plenty, but wet weather keeps them back. *Hickory*: Chinch-bugs quite numerous in oats, but not yet doing much damage, owing to wet weather. *Lafayette*: The only crops the countless millions of grasshoppers are leaving are corn and oats; after destroying everything else they may turn attention to them. *Moniteau*: Very promising. *Iron*: Chinch-bugs commencing their ravages. *Perry*: Look bad. *Caldwell*: Looking very healthy. *Platte*: Began to show off splendidly; now not a single field left—entirely destroyed by the grasshoppers, more numerous than ever before. *Maries*: Never better. *Henry*: Great ravages by chinch-bugs and grasshoppers. *Pettis*: Prospect never better.

KANSAS.—*Allen*: Mostly taken by the grasshoppers. *Brown*: Grasshoppers have destroyed most of the oats. *Cherokee*: Fine; attacked by grasshoppers in but few instances. *Crawford*: Never looked better; may have a good crop if spared by the grasshoppers, which have already done some injury. *Rice*: Never better. *Anderson*: An extra effort made to get out a crop for early feeding, but it is cut short, and in some parts entirely ruined by grasshoppers. Fields that stood 10 inches high two weeks ago are as bare as the road-bed. *Franklin*: Cut short by grasshoppers. In this school-district the area sown in flax-seed and oats, this spring, was 290 acres: now not a vestige remains. *Jefferson*: A large amount destroyed by grasshoppers. *Douglas*: Most of the oats already destroyed by grasshoppers. *Marshall*: Destroyed by grasshoppers. *Graham*: Seem to be failing—turning yellow and dying. *Leavenworth*: All destroyed by grasshoppers. *Osage*: Very few sown for want of seed. *Wabaunsee*: Being destroyed by grasshoppers. *Johnson*: Of my 106 acres of oats the grasshoppers have taken 80, and are still walking. *Labette*: So far free from pests: the most promising crop we have. *Neosho*: Mostly destroyed by grasshoppers. *Atchison*: Greatly damaged by grasshoppers.

NEBRASKA.—*Paynee*: About 20 per cent. taken by grasshoppers, which are still at work. *Franklin*: Decrease in acreage, owing to scarcity of seed; look well. *Merrick*: Farmers could not obtain seed; small grasshoppers destroying green stuff. *Otoe*: Being destroyed by grasshoppers. *Madison*: Poor; owing to bad seed. *Antelope*: The large decrease in acreage due to scarcity of seed, and to fear of destruction by grasshoppers. *Cass*: Cut short one-fourth by grasshoppers. *Thayer*: Looking splendidly.

UTAH.—*San Pete*: Very good.

COLORADO.—*El Paso*: Deficient, owing to grasshoppers.

NEW MEXICO.—*Taos*: Look bad, owing to late frosts.

DAKOTA.—*Davison*: Never saw better looking. *Lincoln*: Never looked better.

BARLEY.

Spring barley has not quite its usual area in the Middle States, but its acreage has been increased beyond the Mississippi. Ohio and Wisconsin appear to have a full breadth, while other Western States indicate a slight falling off. Condition is generally placed very near an average, with some deterioration from insect ravages and drought,

NEW YORK.—*Genesee*: Acreage increased from plowed-up wheat area. *Wyoming*: Being sown where wheat has been plowed up, and looks well.

TEXAS.—*Lamar*: Will yield better than ever before. *Bosque*: Much better than usual.

ARKANSAS.—*Prairie*: About 50 acres sown in the county; most of it now ready to cut; estimated yield 20 to 50 bushels per acre.

TENNESSEE.—*Washington*: Coming into notice and promises to be a good crop.

KENTUCKY.—*Oldham*: Froze out in the winter.

OHIO.—*Pike*: Short and thin. *Warren*: Winter barley an entire failure; spring, fine.

MICHIGAN.—*Allegan*: Planted late but looks well.

INDIANA.—*Franklin*: An entire failure. *Ripley*: Winter barley almost an entire failure.

ILLINOIS.—*Cook*: Badly injured in April.

WISCONSIN.—*Dodge*: Poor enough, many pieces being plowed up. Chinch-bugs and grasshoppers plenty. *Iowa*: Nearly all destroyed by chinch-bugs. *Jefferson*: Chinch-bugs making sad work with some pieces of barley. *Milwaukee*: Some fields quite destroyed by chinch-bugs. *Sauk*: Chinch-bugs materially injuring the barley, so much so that some have plowed it up.

MINNESOTA.—*Winona*: In the western part of the county, decidedly good. *Sibley*: One-half already destroyed by grasshoppers.

IOWA.—*Howard*: That sown before April 17, perished; that sown later looks well. *Des Moines*: Very thin. *Muscatine*: Injured by drought.

KANSAS.—*Brown*: All destroyed by the grasshoppers. *Jackson*: Looked well up to last week, when the grasshoppers commenced ravages. *Jefferson*: Nearly all destroyed by grasshoppers. *Graham*: Looks fine. *Labette*: Every acre killed by dry freezes in March.

NEBRASKA.—*Madison*: Promises a good crop. *Thayer*: Looking splendid.

CALIFORNIA.—*San Joaquin*: Injured by a "cold wave" the first part of April. *Stanislaus*: The fields very spotted, owing to drought.

UTAH.—*San Pete*: Very good.

CLOVER.

The acreage in clover was increased in all the New England States except Rhode Island. New Jersey maintained her previous area, but the other Middle States reduced theirs from 4 per cent. in New York to 18 per cent. in Delaware. Maryland and Virginia reduced their acreage to some extent, but the other southern coast States enlarged. In the Gulf States this crop has as yet been slightly cultivated. Alabama and Mississippi increased their small clover-fields, while the other States of this region make no returns. Arkansas slightly increased her area, while the other inland Southern States showed a considerable decline. The reduction of acreage was still more general north of the Ohio River and west of the Mississippi, though Wisconsin nearly held her own. The Pacific States enlarged their acreage.

The condition of the clover-crop was greatly depressed by agencies, both animate and inanimate, though the former caused but a small portion of the general disaster. It is remarkable that this crop suffered more severely from winter-killing in the southern than in the northern sections of New England; while Connecticut reports only 82 per cent. of an average, and Rhode Island 60, the other States of this region were nearly or quite average. All of the Middle States were below average, the crop being winter-killed or greatly dwarfed by the extreme cold. The same causes operated in the South Atlantic and Gulf States, though Mississippi reports a full average condition for her small clover-crop. In Arkansas the crop was above average, but in the other inland Southern States it suffered severely from the extreme low temperatures of the winter and spring. North of the Ohio the crop shows the same superiority of condition in the northern sections that was observable in New England. Michigan and Wisconsin show a higher condition than Ohio, Indiana, and Illinois. West of the Mississippi River the crop is cultivated to a small extent; and it showed a very serious depreciation, suffering most in Kansas, where it was subjected, with other crops, to the devastation of grasshoppers. On the Pacific coast it was reduced 20 per cent. below average in California and 5 per cent. in Oregon. The following notes of its condition are condensed from our reports:

MAINE.—*Cumberland*: Needs rain. *Sagadahoc*: Needs rain.

VERMONT.—*Grand Isle*: Clover winter-killed.

RHODE ISLAND.—*Kent*: Clover winter-killed almost universally.

NEW YORK.—*Seneca*: Clover largely plowed up for corn. *Queens*: Much winter-killed. *Kings*: New clover greatly destroyed. *Genesee*: Badly killed.

NEW JERSEY.—*Monmouth*: Largely killed. *Warren*: Very short; cold spring and drought.

PENNSYLVANIA.—*Beaver*: Most of the young clover winter-killed, and plowed up. *Chester*: Young clover sown with wheat is very poor. *Bucks*: Half winter-killed. *York*: Shortened by cold and drought. *Columbia*: Tolerable. *Lycoming*: Very poor.

MARYLAND.—*Calvert*: Greatly dwarfed. *Howard*: Shortened by late, dry spring.

VIRGINIA.—*Highland*: Dried up. *Halifax*: Half crop. *Richmond*: Young clover mostly frost-killed. *Spotsylvania*: Very poor. *Madison*: Very indifferent. *Mecklenburgh*: Injured by frost, April 18. *Henrico*: Short 25 per cent. *Dinwiddie*: Promising clover-crop badly frozen. *King William*: Greatly injured by frost. *Washington*: Half crop. *Campbell*: Greatly injured, but improving. *Rockingham*: Very unpromising. *Prince George*: Damaged by May drought.

NORTH CAROLINA.—*Caldwell*: Clover injured by drought. *Hertford*: Looks fine; nearly ready to cut.

GEORGIA.—*Walker*: Looked well in March, but has suffered from drought.

TENNESSEE.—*Grainger*: Clover short and small. *Lauderdale*: Injured by drought. *Loudon*: Almost a failure. *Sumner*: Young clover a good stand, and vigorous. *Lincoln*: Drought of last summer and army-worms ruined the crops. *Coffee*: Killed by drought of last year. *Greene*: Below average. *Carter*: A failure.

WEST VIRGINIA.—*Jefferson*: Largely destroyed by grasshoppers and drought.

KENTUCKY.—*Gallatin*: Short. *Graves*: Winter-killed. *Calloway*: Mostly frozen out. *La Rue*: Old clover indifferent; young, very fine. *Simpson*: Drought. *Meade*: Drought.

OHIO.—*Warren*: Badly frozen out. *Union*: Badly frozen out for two years; all over a year old destroyed. *Coshocton*: Short. *Ashland*: Mostly frozen out. *Delaware*: Badly frozen out. *Gallia*: Badly frozen out. *Perry*: Mostly frozen out in April. *Lucas*: Winter-killed.

MICHIGAN.—*Lenauee*: Very poor; many have lost their last seeding. *Ottawa*: Looks well.

INDIANA.—*Decatur*: All killed. *Ripley*: Injured by the extreme cold of winter. *Fayette*: Old clover mostly winter-killed, and plowed up for corn. *Washington*: All that was mown or pastured last fall was entirely frozen out. *Gibson*: Mostly killed. *Wabash*: Old clover all frozen out. *Wells*: Badly winter-killed. *Brown*: Badly frozen out. *Fulton*: Largely winter-killed.

ILLINOIS.—Probably 99 per cent. of the seeding of 1874 was ruined by drought; old clover badly winter-killed. *Fulton*: All frozen out. *Schuyler*: All killed except last spring's seeding. *Tazewell*: Froze badly in both old and new meadows. *Clark*: Badly winter-killed. *Monac*: Old clover badly frozen out. *Franklin*: Badly frozen out, especially old clover. *Pike*: Winter-killed; drought. *Macon*: Old clover mostly dead. *Troquois*: Winter-killed. *Vermillion*: Winter-killed. *Cook*: Winter-killed. *Logan*: Winter-killed.

MINNESOTA.—*Wabasha*: Badly winter-killed.

IOWA.—*Henry*: Winter-killed. *Jefferson*: Winter-killed. *Louisa*: Entirely killed; scarcely a field escaped. *Guthrie*: Alsike came through the winter well.

MISSOURI.—*Caldwell*: Somewhat frozen out. *Jefferson*: Clover now in bloom. *Perry*: Short; badly frozen out.

KANSAS.—*Nemaha*: Mostly killed by drought of last year. *Brown*: Swept by grasshoppers. *Cherokee*: Large acreage sown, but two-thirds eaten by grasshoppers. *Newsko*: Destroyed by grasshoppers.

NEBRASKA.—*York*: Clover tried with indifferent success in a few cases.

PASTURE.

The condition of spring pasture was above average in Maine and Vermont, but below in all the other New England States, the greatest depreciation being in the southern counties. A need of rain was generally noted, and a lateness of growth. The depreciation was general through the Middle and South Atlantic States, where drought and low temperature combined to check vegetation. Fine local rains and improved growing-weather has improved the prospect in many counties. The condition was above average in all the Gulf States except Alabama, and in Arkansas and Tennessee. In West Virginia and Kentucky grass was much injured by cold weather and very backward, but the promise was improving. North of the Ohio River the condition was slightly above average in Michigan, but below average in the other States, the minimum, 81, being in Ohio. West of the Mississippi, Kansas reports a condition above average, but the other States below. In some districts, as in Renville, Minnesota, grasshoppers were devouring the spring pastures. California reports very short crops; but Oregon is above average. Our few reports from the Territories indicate a late growth.

MAINE.—*Androssoggin*: Pasture promising. *Sagadahoc*: Well forward, but needs rain. *Cumberland*: Needs rain.

NEW HAMPSHIRE.—*Hillsborough*: Grass promising, but needs rain. *Carroll*: Grass but little winter-killed.

VERMONT.—*Orleans*: Pasture about sufficient to sustain animals without other feed.

MASSACHUSETTS.—*Norfolk*: Late and below average. *Berkshire*: Good for the season. *Plymouth*: Unpromising.

RHODE ISLAND.—*Kent*: Grasses badly winter-killed.

CONNECTICUT.—*Litchfield*: In many places grass is a dead failure.

NEW YORK.—*Greene*: Burning up. *Rockland*: Rain greatly needed. *Queens*: Very

poor. *Struben*: Very backward. *Genesee*: Tolerable. *Chenango*: Wants rain. *West-chester*: Very short. *Wyoming*: Slow in starting, but rapidly progressing. *Fulton*: Needs rain. *Jefferson*: Late rains have given a fine start. *Warren*: Fair average. *Orange*: Drought. *Allegany*: Grass frozen stiff June 4.

NEW JERSEY.—*Monmouth*: Rain much needed. *Warren*: Very short; cold spring and drought. *Mercer*: Very short. *Burlington*: Drought.

PENNSYLVANIA.—*Montour*: Grass very short. *Sullivan*: Pastures and meadows very poor; cold and drought. *Mifflin*: Scarce. *Cumberland*: Fields bare. *York*: Shortened by cold and drought. *Franklin*: Very short. *Elk*: Pasture late and farm-animals suffering. *Crawford*: Promises a full average. *Columbia*: Backward. *Lycoming*: Very poor. *Wayne*: Drying up. *Lancaster*: Very short. *Fulton*: Grass-crops unusually bad. *Berks*: Shortened by drought.

MARYLAND.—*Calvert*: Very short. *Frederick*: Poor. *Howard*: Shortened by drought. *Cecil*: Grass injured by drought.

VIRGINIA.—*Highland*: Dried up. *Augusta*: Drought. *Goochland*: Drought. *Madison*: Poor. *Pulaski*: Very short. *Bland*: Drought. *Nelson*: Destructive drought. *Washington*: Dried up. *Floyd*: Needs rain. *Rockingham*: Very unpromising. *Tazewell*: Shorter than for years. *York*: Poor.

NORTH CAROLINA.—Pastures injured. *Caldwell*: Injured by drought.

ALABAMA.—*Perry*: May drought shortened pastures. *Lawrence*: Unusually fine.

TEXAS.—*De Witt*: Grass-crop fine. *Woodruff*: Pasture and meadows never better.

ARKANSAS.—*Van Buren*: Range our only pasture; looks unusually fine. *Arkansas*: Very good.

TENNESSEE.—*Robertson*: Spring pastures a failure. *Lauderdale*: Very little. *Loudon*: Bad season for grasses. *Blount*: Very short and dry. *Hawkins*: Drought.

WEST VIRGINIA.—*Monroe*: Pastures short. *Pocahontas*: Spring pasture very backward. *Jefferson*: Pastures backward and hay scarce. *Braxton*: Injured by cold weather. *Grant*: Grass very scarce and drying up. *Harrison*: Pastures very short. *Barbour*: Dried up. *Pendleton*: Drought. *Hancock*: Greatly improved by late rains.

KENTUCKY.—*Robertson*: Pastures short and backward. *Lincoln*: Unpromising. *Galatin*: Backward, but improving. *Greenup*: Almost worthless. *Henry*: Becoming luxuriant. *Simpson*: Drought. *Meade*: Drought.

OHIO.—*Jackson*: Pastures very short. *Coshocton*: Short. *Geauga*: Grass-crop better than for years. *Ashland*: Hardly half average. *Belmont*: Grass-crops very unpromising. *Crawford*: Short. *Gallia*: Pastures bare.

MICHIGAN.—*Ottawa*: Grass looks well. *Shiawassee*: Spring pastures rapidly improving.

INDIANA.—*Fayette*: Pastures short. *Decatur*: Backward; poorer than ever before. *Howard*: Very backward. *Ripley*: Pastures in good condition. *Shelby*: Grasses backward. *Steuken*: Doing well. *Dubois*: Fine. *Harrison*: Grass poor. *Perry*: Grass-crops fine. *Fountain*: Remarkably good; cattle never doing better.

ILLINOIS.—*Sangamon*: Greatly benefited by late rains. *Fulton*: Grass-crops look well. *Mercer*: Slow growth. *McLean*: Fair average. *Tazewell*: Grass-crop light. *Clark*: Grass starting finely. *McHenry*: Grass-crops abundant. *Fayette*: Spring pastures good; excellent rains. *Pike*: Too dry.

WISCONSIN.—*Juneau*: Grasses never looked better; promise of the largest hay-crop ever made here. *Saint Croix*: Grass growing finely.

MINNESOTA.—*Renville*: In the big woods near Saint Peter grasshoppers have taken nearly all the grass, and live stock is driven away for food.

IOWA.—Very poor; drought. *Mahaska*: Grass looks finely. *Muscatine*: Seriously injured by drought and hard winter. *Dallas*: Injured by cold weather. *Henry*: Light. *Guthrie*: Cultivated grasses on the increase. *Fayette*: Kept back by drought, but promising.

MISSOURI.—*Caldwell*: Pasture late and poor. *Knox*: Very backward. *Moniteau*: Timothy meadows killed by drought; hardly worth cutting except on low land. *Bates*: Swept by grasshoppers. *Dariess*: Doing well. *Schuyler*: Badly winter-killed. *Henry*: Cut short by chinch and grasshoppers. *Maries*: Very good.

KANSAS.—*Miami*: Pasture good on high prairies; in the timber-belts it has been swept by grasshoppers. *Washington*: In fine condition; abundant rains. *Anderson*: Early grass cut off by grasshoppers.

NEBRASKA.—*Antelope*: Grass starts slowly.

DAKOTA.—*Yankton*: Grass late.

FRUIT.

Our statistical reports indicate a widespread disaster to the fruit-growing interest, as will be seen from the following notes. Insect-depredations are recorded only in Maine, in some counties of which tent-caterpillars were troublesome. In New England generally the crops were late, and in some parts a tendency to simultaneous blooming ex-

cited remark. In the Middle, Southern, and Western States generally the climatic conditions were very unfavorable. The severity of the winter not only destroyed the fruit-germs, but also the trees. The cold snap in the spring enlarged the scope of this injury, and heavy late frosts in many places destroyed what had survived the winter. In some cases it is noted that plums stood the severity of the season better than other sorts of fruit. In other cases only the hardy crab-apple remained. Grapes in many cases escaped on account of late blooming, but the vineyards of several counties were greatly depleted by the extreme cold. Small fruits were less severely affected, and are frequently reputed as producing very luxuriantly. The following is a brief *résumé* of the condition of the apple and peach crops:

APPLES.—The apple-crop suffered severely in all parts of the country. In New England, Vermont reports an average amount of bloom and condition of the fruit on the 1st of June, though the crop was generally late. Several counties in Maine report injuries from caterpillars. The crop-yield promises to be full average in Vermont and Rhode Island, but in the other States below; Connecticut will gather about two-thirds of a crop.

In the Middle States the fullest bloom was in Delaware, but the best promise of a crop, as inferred from the condition of the fruit, is in New Jersey. In many counties there will be a great scarcity of this fruit.

The same depressing influence marks the crop in the States along the Atlantic coast.

The amount of bloom was from 2 to 20 per cent. below average in the Atlantic-coast States, but the crop grows poorer as the latitude decreases. The condition was but 10 per cent. below average in Maryland, while in South Carolina it is depreciated about 70 per cent.; in Georgia, however, it loses but 25 per cent.

In the Gulf States, Mississippi, Louisiana, and Texas report an amount of bloom full average or above, but in the other States it was below, the minimum, 75 per cent., being in Florida. The condition of the fruit ranged from 77 in Florida to 108 in Texas.

In the inland Southern States the bloom was average in Arkansas, but declined to 60 in West Virginia. The condition of the fruit varied from 80 in Arkansas to 33 in Kentucky.

North of the Ohio River, apples seem to have resisted the cold and other depressing influences better in the northern zone of Michigan and Wisconsin than in regions farther south. The average bloom of counties reporting from Ohio did not exceed 25 per cent. of an average, and the condition of the fruit was but 30 per cent. Indiana and Illinois did not suffer so severely, yet they may not expect probably much over a half-crop. Michigan and Wisconsin will realize considerably over three-fourths of an average crop.

West of the Mississippi the promise is better. The most severe injury is reported in Kansas and Nebraska, where the grasshopper, last year, stripped the trees of foliage and of young wood-growth; yet the two last-named States, if exempted from further visitation, may look for 60 per cent. of an average crop.

On the Pacific coast the crop of California was cut down one-half by the disturbing atmospheric conditions. Oregon, however, presents a condition of fruit nearly up to average, while the bloom was 14 per cent. above.

PEACHES.—The late season kept back the small amount of peach-

growth in Northern New England too late for our June report. A few counties in New Hampshire show an amount of bloom above average, though the condition of the fruit was slightly below. In the other New England States the condition of the crop was nearly average, on the whole, the bloom being rather above.

In the Middle States, Delaware showed a profuse bloom, 25 per cent. above average, but the subsequent condition of the fruit was only average. In the other States of this section the crop was considerably reduced, though its condition was more promising than was indicated by the amount of bloom. Pennsylvania and New Jersey will have considerably over a half crop, while New York will probably harvest nearly three-fourths of an average. In some counties the winter-freezes killed the trees.

In the South Atlantic coast-region the bloom was from 2 to 12 per cent. below average. The condition of the crop was 30 per cent. of an average in North Carolina; 40 in South Carolina; 35 in Virginia; 80 in Georgia; and 92 in Maryland.

In the Gulf States, Mississippi and Louisiana were 5 per cent. above average, considering the amount of bloom and the subsequent condition of the fruit. In Alabama the bloom was above average, but the subsequent condition was 20 per cent. below. Florida and Texas were below average both in bloom and condition. The extreme cold in some localities even as far south as Texas killed the trees.

The crop was greatly injured in Arkansas and West Virginia, and well-nigh ruined in Tennessee and Kentucky, though the bloom, except in West Virginia, indicated nearly a full crop. The fruit condition on the 1st of June was 90 per cent. in Arkansas; 30 in Tennessee; 50 in West Virginia; and 30 in Kentucky.

North of the Ohio River the disaster was still greater. The amount of bloom varied from only 15 per cent. of an average in Ohio to 70 in Wisconsin; the fruit-promise ranged from 25 per cent. in Ohio to 45 per cent. in Michigan. Wisconsin makes no returns, her scanty peach-culture not indicating its results in the tardy season.

West of the Mississippi River, Minnesota makes no returns. In the other States of this region peach-bloom was scanty, ranging from 25 per cent. in Nebraska to 80 in Missouri. The best condition, 72, is in Kansas, and the worst, 30, in Iowa.

On the Pacific coast, California, with a peach-bloom but 5 per cent. below average, reports a condition of fruit 50 per cent. below. In Oregon the bloom was 20 per cent. below average, and the condition of the fruit 25 per cent. below.

The following notes, condensed from the reports of our correspondents, show something of the local disasters to the fruit-crops:

MAINE.—*Oxford*: Apples and peaches injured by caterpillars; otherwise the crops would be good. *Piscataquis*: Promise of a fair apple-bloom. *York*: Apple-bloom just coming out; fair promise for an odd year; caterpillars abundant.

NEW HAMPSHIRE.—*Hillsborough*: Apple-bloom promises to be full.

VERMONT.—*Franklin*: Bloom late but promising. *Orleans*: Apple-bloom late.

MASSACHUSETTS.—*Norfolk*: Peaches bloomed well; not largely grown. *Berkshire*: Apple and peach bloom abundant. *Plymouth*: All kinds of fruit bloomed simultaneously.

NEW YORK.—*Lewis*: Apple-bloom not full. *Wayne*: Very little apple-bloom. *Queens*: Apples blooming well; pears winter-killed. *Cattaraugus*: Fruit promising. *Wyoming*: Bloom scanty.

NEW JERSEY.—*Warren*: Three-fourths of the apples did not bloom. *Burlington*: Apple-bloom scanty; peaches look well.

PENNSYLVANIA.—Show for fruit not great. *Leligh*: Many peach-trees winter-killed. *Warren*: Fruit, especially peaches, suffered severely from the hard winter. *Clearfield*: Very light apple-bloom; peach-trees mostly killed. *Cambria*: Fruit-bloom scanty. *Indiana*:

Very little bloom of any kind. *Lycoming*: Poor prospect. *Lawrence*: Frost very destructive.

DELAWARE.—*Sussex*: Peaches greatly injured.

MARYLAND.—*Calvert*: Fruit prospect improving. *Dorchester*: Apple-trees loaded with fruit. *Wicomico*: Fruit injured severely by frost. *Baltimore*: Peaches a short crop; other fruits medium.

VIRGINIA.—*Anelia*: All the peaches and many apples killed in the April cold snap. *Highland*: A few peaches but no apples. *Smyth*: Early fruits fatally frosted. *Augusta*: Nearly all killed. *Bedford*: Frost killed all the peaches and most of the apples. *Goochland*: Most of the fruit, including all the peaches, killed. *Spottsylvania*: Apples half crop; peaches one-eighth. *Mecklenburgh*: Few apples and no peaches. *Prince Edward*: All the peaches and most of the apples destroyed. *Lancaster*: All fruits injured by winter-cold and spring-frosts. *Louisa*: Bloom very abundant, but almost all killed except winter-apples. *Greenville*: A few apples left; no other fruit. *Chesterfield*: Apples generally frosted; Wine Sap and Fallwater have most successfully resisted the cold and are showing good crops; very few peaches. *Craig*: Apples and peaches all killed by the April freeze. *Clarke*: Apple-bloom average, but the fruitage is 40 per cent. less. *Charles City*: Fruit mostly destroyed. *Southampton*: All killed. *Henrico*: Fruit very scarce; two-thirds of the vine-shoots killed. *King George*: Extraordinary bloom of dewberries and blackberries. *Dimwiddie*: Frost swept four-fifths of the crop of apples; other kinds swept clean. *James City*: Few apples or peaches. *Elizabeth City*: April cold very destructive. *King William*: Mostly destroyed. *Princess Anne*: All fruits badly damaged. *Bland*: Mostly killed. *Ne:son*: Mostly destroyed. *Patrick*: Peaches mostly destroyed. *Washington*: Apples mostly killed; no peaches. *Pittsylvania*: Killed. *Page*: Nearly all killed. *Campbell*: A few apples, no peaches. *Sussex*: Cold snap killed most of the apples and all the peaches. *Tazewell*: Freeze of April killed the fruit, leaving a half crop of apples. *King: and Queen*: Damage by cold, but improving. *Lee*: Fruit a failure.

NORTH CAROLINA.—*Yadkin*: Most of the peaches killed; about a third of a crop of apples. *Wilson*: Fine bloom of apples and peaches nearly or quite all killed. *Edgecombe*: Fine prospect for apples and peaches nearly ruined by April frost. *Burke*: Apples and peaches mostly killed; there will be some fruit in orchards protected by timber from the western winds. *Person*: Apples and peaches frost-killed. *Alamance*: Fruit a failure. *Wake*: Fruit almost destroyed by frost. *Camden*: Except plums, fruit is mostly cut off. *Franklin*: April frosts destroyed all the peaches and most of the apples. *Columbus*: No fruit of any kind. *Ashe*: Fruit mostly killed. *Gates*: Fruit all killed. *Caswell*: Peaches entirely failed; a third of a crop of apples. *Surrey*: Apples badly injured by frost; peaches a total failure. *Transylvania*: Peaches all killed by frost in April; apples escaped, not being in bloom. *McDowell*: Peach and apple bloom 10 per cent. above average and 50 per cent. above last year. *Caldwell*: Many apples and nearly all the peaches killed by April frosts and cold weather. *Yancey*: Apples injured and nearly all the peaches killed by the freeze of April 13. *Hertford*: Fruit mostly cut off; grapes doing very well. *Montgomery*: Fruit mostly killed. *Bladen*: All fruit frost killed. *Anson*: Peach and apple bloom very abundant, but the fruitage mostly frost-killed.

SOUTH CAROLINA.—*Darlington*: Peaches, apples, and pears frost-killed; small fruits good. *Marion*: Apples and peaches mostly destroyed. *Lexington*: Apples and peaches mostly failed. *Laurens*: April frosts very destructive. *Richland*: A few peaches; no apples; grapes killed, but a second crop has appeared. *Fairfield*: Apples badly injured by frost; peaches mostly killed. *Greenville*: Frost left very little. *Orangeburgh*: Many apple-trees died from some cause; peaches frosted.

FLORIDA.—*Santa Rosa*: Fruit-blooms injured by extremes of heat and cold. *Columbia*: Peaches frosted and shedding; half-crop. *Jackson*: Peaches fully up to last year.

GEORGIA.—*Morgan*: Late frosts cut off the fruit. *Carroll*: Apples and peaches frost-killed. *Clayton*: Apple prospect poor; plenty of peaches. *Whitfield*: Apples and peaches largely frost-killed. *Grinnett*: Prospect for peaches the best for ten years; apple-crop short. *Fannin*: The late freeze killed many apples and all the peaches. *Gordon*: Fruit destroyed by late frosts.

ALABAMA.—*Perry*: Peach-crop unusually good. *Calhoun*: Apples mostly failed; three-fourths of a peach-crop. *Madison*: Apples and peaches frost-killed. *Livingston*: All fruits killed. *DeKalb*: Greatly injured by frost. *Montgomery*: Apples and peaches bloomed well; fruitage healthy, but apples not so great in quantity as usual; strawberries a full crop. *Marion*: Apples thin on the trees but large; peaches plenty in high lands but frost-killed on low lands. *Walker*: Nearly all frost-killed.

MISSISSIPPI.—*Holmes*: Peaches bloomed abundantly, but rains, frost, blight, and worms injured the crops greatly. *Kemper*: Fruit a comparative failure. *Noxubee*: Scarce and small. *Smith*: Apples and peaches a full average in spite of the late cold weather. *Wayne*: Fruit will not be as good as last year, except in a few localities. If the Early Beatrice prove to be as prolific a bearer as the Hale's Early, it will be the most valuable market-fruit of our section. *Amite*: Peach and apple crops fine; small fruits doing well. *Pike*: Peaches and apples very fine.

LOUISIANA.—*Concordia* : Fruit prospects very promising. *Washington* : Prospect tolerable. *East Baton Rouge* : Large and promising crops.

TEXAS.—*Henderson* : Apples never better; January cold weather killed half the peach-trees, and left the remainder in bad condition. *Wood* : Apples shortened by worms. *Kendall* : Greatly injured by a hail-storm. *Bandera* : Late frosts killed three-fourths of the apples and peaches. *Austin* : Peaches injured by dry, cold winds.

ARKANSAS.—*Boone* : Apples and peaches frost-killed. *Benton* : Apples and peaches badly injured by cold. *Washington* : Very few apples or peaches. *Izard* : Half crop of apples; other fruits mostly killed. *Saint Francis* : Peach-crops good, but late; apples considerably damaged by caterpillars. *Van Buren* : Fruit mostly frost-killed; what escaped is indifferent. *Jefferson* : Prospects remarkably good. *Stone* : Apples and peaches killed by late frosts. *Arkansas* : Apples good; peaches extraordinarily large and fine.

TENNESSEE.—*Putnam* : The spring freeze thinned out the apples to about a good crop, which is very promising; peaches mostly killed. *Jefferson* : Fruit a failure. *Dickson* : Late frosts made a clean sweep of apples and peaches. *Grainger* : Small fruits abundant. *Lauderdale* : Late frost killed two-thirds of peaches and apples. *Sullivan* : Fruits badly injured by April freezes. *Bedford* : Frosts in April killed nearly all the fruit. *Trousdale* : Very few apples or peaches. *Sequatchie* : Apple and peach bloom full, but frosts have cut off the crop one-half. *Warren* : Summer apples and peaches a failure; fall and winter apples injured; loss estimated as high as \$100,000 in the county. *Lawrence* : Apples and peaches all killed. *Lincoln* : April cold-snap destroyed the fruit. *Blount* : Apples half average bloom and afterward depleted by frosts; peaches full bloom and mostly frost-killed. *Hawkins* : Fruit mostly killed in bloom. *Sevier* : Fruit failed; no peaches except in a few mountain-gorges. *Knox* : Fruit mostly frost-killed. *Greene* : Few apples and still fewer peaches. *Fayette* : Fruit greatly frost-killed; apples worse than peaches. *Carter* : A large apple and peach bloom killed by spring frosts.

WEST VIRGINIA.—*Marion* : Badly injured in April. *Monroe* : A fine promise of fruit ruined by frost April 16; trees more or less injured; sweet-cherry-trees fatally. *Raleigh* : Total failure of fruit. *Wayne* : Apples and pears mostly destroyed by cold weather, April 16 and 17. *Braxton* : Badly frost-killed. *Fayette* : Freeze of April 16 and 17 killed nearly all the apple-bloom; small fruit and grapes badly injured; tame raspberries generally killed down to within a few inches of the ground, except where they had been covered; we will have only small fruits this year. *Harrison* : Apples a failure and peaches but little better. *Jackson* : Severe April weather killed most of the apple-bloom and much of the peach-wood. *Boone* : Fruit killed except a few apples. *Cabell* : A few late apples only. *Barbour* : Apples, cherries, and peaches killed. *Nichols* : All killed by April frost. *Pendleton* : All destroyed. *Mason* : Poor prospect. *Upshur* : Apples and peaches frost-killed. *Preston* : Destructive frosts. *Mercer* : Nearly all the fruit killed.

KENTUCKY.—*Clinton* : All of the peaches and most of the apples killed; some apples that had not bloomed may escape. *Jefferson* : Severe cold destroyed nearly all the fruit-buds. *Anderson* : Severe weather in April very destructive; fine promise of fruit blasted. *Boyle* : All sorts of fruit killed by the April freeze; even the blackberries were cut off. *Edmonson* : All forward fruits badly injured. *Logan* : Apples will not average more than fifteen or twenty to the tree; peaches, five or six; no plums or cherries. *Mason* : Small fruits tolerable; others a failure. *Breckinridge* : Apples and peaches badly frosted. *Butler* : Apples about a fifth of a crop; peaches still less; a few plums and cherries; grapes one-fourth of a crop. *Lincoln* : Fruit-crop not worth notice. *Metcalfe* : Few apples and no peaches. *Gullatin* : All fruits failed except blackberries. *Graves* : Half the apples killed; the rest doing well; three-fourths of the peaches killed. *Greenup* : Apples and peaches mostly destroyed. *Henry* : All kinds of fruit destroyed. *Callaway* : Fruit mostly destroyed. *Larue* : Apples and peaches mostly killed. *Owsley* : Fruit all killed.

OHIO.—*Williams* : Apples largely killed; peaches seldom make a crop. *Hocking* : Fruit mostly killed. *Jackson* : April cold-snap made a clean sweep of fruit. *Medina* : Apples overbore last year, and would have had a light crop this year without any frost; it had but little damage to do; other fruits badly injured. *Vinton* : Fruit injured by the hard freeze. *Coshocton* : Apples and peaches failed; there will be some cherries; plums and grapes a full crop. *Hancock* : Apples badly frosted. *Mercer* : Fruit nearly all killed. *Richland* : Apples and peaches mostly winter-killed. *Tuscarawas* : Apples and peaches a failure. *Ashland* : Apples and peaches a complete failure; pears a shade better; grapes very promising. *Belmont* : Greatest fruit-failure on record. *Crawford* : All winter-killed except some grapes and currants. *Highland* : No fruit except currants and gooseberries. *Brown* : Not an apple or peach blossom; winter destructive; many peach-trees killed. *Carroll* : Apples and peaches a failure. *Delaware* : Fruit an entire failure. *Jefferson* : Apples and peaches mostly winter-killed; not over 10 per cent. of average bloom. *Sandusky* : No peaches; most of the trees killed. *Pike* : Only a few late apples; no peaches. *Lucas* : Very few peaches. *Athens* : No apples or peaches; peach-trees generally injured.

MICHIGAN.—*Lapeer* : Peaches all killed by cold weather. *Hillsdale* : Peaches failed. *Ottawa* : Peach-buds mostly killed; trees injured. *Saginaw* : Apples damaged; peaches killed. *Van Buren* : No fruit except a small amount at South Haven; grapes much injured. *Tuscola* : Peaches almost nothing. *Barry* : Peach-trees killed down to the ground; very

scanty apple-bloom. *Ottawa* : Only the hardiest apple-trees living ; no peaches. *Washenaw* : Fruit-trees badly killed. *Allegan* : Fruit-crops mostly ruined. *Antrim* : Fruit severely injured ; Baldwin apples frosted. *Manistee* : Three-fourths of the peach-trees killed ; pears also suffered, but other fruits are very promising ; pears considerably blighted. *Mason* : Peach-trees mostly destroyed. *Shiawassee* : Scanty apple-bloom ; no peaches. *Charlevoix* : Fruit killed ; cherry and apple trees injured to a great extent.

INDIANA.—*Madison* : No fruit except a few currants and cherries ; peach-trees mostly winter-killed. *Dearborn* : Frost made a clean sweep of apples and other fruits ; half the strawberries and most of the blackberries killed. *Howard* : Few apples, and no peaches ; small fruits generally killed. *Jennings* : Fruit a failure, except grapes and a few late apples and pears. Fruit killed April 16 and 17. *Shelby* : No apples or peaches ; small fruit scarce. *Washington* : Apples and peaches nearly all killed. *Dubois* : Apple-bloom large, but fruit dropping. *Gibson* : All sorts will be scarce. *Harrison* : Badly injured by frost ; a few apples ; pears and peaches nearly all killed. *Tippecanoe* : Fruit prospect poor. *Jasper* : Some kinds of apples bloomed well, but are fruiting poorly. *White* : Poor fruit-crops. *Hendricks* : No fruit. *Montgomery* : Fruit badly frosted ; mostly a failure. *Wells* : Peaches nearly all killed ; few apples or cherries. *Franklin* : Apples and peaches a failure ; many trees killed. *Fountain* : Apple-trees put out considerable bloom, but the fruitage is almost nothing ; no pears or peaches ; many peach and cherry trees killed. *Carroll* : Many apple-trees killed. *Fulton* : But little fruit.

ILLINOIS.—*Froquois* : Fruit will be very scarce. *Vermillion* : Few apples and no peaches. *Cook* : Apples injured by four years of drought. *Pope* : Apples and peaches mostly frost-killed. *Mercer* : Peaches all killed ; Morello cherries, a moderate bloom ; pears half a crop ; apples differ according to their varieties ; small fruits moderate. *McLean* : Apple-bloom light, but fruitage fair. *Bureau* : Winter apples very few. *Jasper* : Three-fourths of the apples and peaches failed. *Johnson* : Peach bloom heavy, but two-thirds killed by frost. *Pulaski* : Fruit injured by hail. *Shelby* : Very little fruit. *Franklin* : Fruit very scarce. *Fayette* : Apples half a crop ; peaches scarce. *Mason* : Apple-bloom good, but fruitage small.

WISCONSIN.—*Juneau* : Apples and pears mostly destroyed by frosts early in May. *Columbia* : Long, cold winter killed many fine fruit-trees. *Dodge* : Apple-trees suffered greatly the last two winters. *Washington* : Small apple-crop. *Calumet* : Fruit-trees badly injured by the severe winter. *Waupaca* : Last winter was very severe on fruit-trees ; whole orchards killed ; only crab-apples stood the test unharmed.

MINNESOTA.—*Martin* : Wild plums successfully cultivated ; better than the tame varieties.

IOWA.—*Muscatine* : Apple-crop almost a failure ; cherry and fruit trees dead in large numbers. *Van Buren* : Grapes and berries promise an abundant crop ; several varieties of cherries damaged. *Cerro Gordo* : But one peach-tree bloomed in the county. *Fremont* : Apples, peaches, and cherries entirely failed. *Hardin* : Apples bloomed well, but blighted badly. *Harrison* : Scanty apple-bloom but promising fruitage. *Jefferson* : Peaches winter-killed.

MISSOURI.—*Caldwell* : Fair prospect for apples ; fair show of peaches in sheltered localities, but the trees were generally injured severely by the hard winter. *Macon* : Good prospect of apples ; no peaches. *Knox* : Peaches winter-killed. *Perry* : Apples bloomed fully, but early varieties were frost-killed ; peaches mostly killed ; small fruits promising. *Stoddard* : Peaches mostly frost-killed. *Bates* : Peaches and apples taken by grasshoppers. *Dariess* : Peaches winter-killed ; many trees destroyed. *Montgomery* : Almost a total failure of apples and peaches. *Callaway* : Abundant bloom, but fruitage largely taken by frost ; apples and pears have dropped off, but grapes look well ; vines full. *Crawford* : But little bloom. *Pemiscot* : Peaches frosted, April 16. *Nodaway* : Young apples falling. *Maries* : Generally frost-killed. *Taney* : Peaches mostly frost-killed.

KANSAS.—*Douglas* : Peaches promise a partial crop ; apples almost a failure ; cherries bloomed full, but show little fruit ; grapes cut by the grasshoppers. *Butler* : Peaches promise a large crop. *Washington* : No peaches and few apples. *Lincoln* : Fruit-trees so damaged by grasshoppers last year that they have not bloomed this spring ; all of last year's growth of wood was destroyed. *Republic* : Peaches all dead, as well as nearly all the new-set orchards. *Sedgwick* : Grasshoppers last year destroyed this year's peaches. *Marion* : Peach-trees largely winter-killed. *Nemaha* : Fruit-trees and vines largely injured by drought and grasshoppers last year. *Greenwood* : Trees injured by grasshoppers last year. *Montgomery* : Apples destroyed by grasshoppers last year. *Atchison* : General failure. *Nesho* : No fruit ; foliage and young growth of last year destroyed by grasshoppers.

CALIFORNIA.—*Mariposa* : All sorts failed except grapes. *Santa Clara* : Frost has shortened all stone-fruit crops ; cold winds injurious. *Alameda* : Badly frosted. *Contra Costa* : Apples and plums, half a crop ; pears and peaches, three-fourths ; apricots, very few. *Kern* : Fruit mostly killed by late frost. *Butte* : Most of the fruit frost-killed. *Tuolumne* : Apples and pears, a fourth of a crop ; other fruits destroyed. *Amador* : Late frosts destructive to fruit in bloom ; grapes, being still later, escaped, and promise a fine crop. *Stanislaus* : Frost killed half the apples, three-fourths of the peaches, and all the apricots.

OREGON.—*Clackamas* : Lawton blackberries injured by frost. *Grant* : Peach-blossoms killed by extreme cold winter ; trees injured. *Douglas* : Peaches all killed ; other fruits promising.

MAPLE SUGAR AND MOLASSES.

New England considerably enlarged her product of sugar. The only State reporting a decline upon last year is Connecticut, in which the product is 95 per cent. New Hampshire is full average; Maine, Vermont, and Massachusetts very considerably above. In Rhode Island the product was too small to attract attention. The product of molasses was not so large, being below average in New Hampshire, Massachusetts, and Connecticut, a deficiency which the increased product of Maine and Vermont will not bring up to the standard of last year. Of the Middle States, New Jersey and Delaware make no report. New York declines 15 per cent. from last year, both in sugar and molasses. Pennsylvania will yield about three-fourths of last year's crop. With one exception, the South Atlantic coast and Gulf States failed to note any sugar production. Virginia reports a product of sugar equal to 87 per cent. of last year, and 96 per cent. of molasses. Of the inland Southern States, Arkansas makes no returns. Tennessee reports a decline of 15 per cent. of sugar and 12 per cent. of molasses. West Virginia and Kentucky are a little in advance of last year. North of the Ohio River the sugar and molasses product declined from 11 per cent. in Wisconsin to 39 per cent. in Michigan. West of the Mississippi the sugar product increased in Minnesota, and declined in Iowa and Missouri. The molasses produced declined in all three, being not over 64 per cent. of last year's product in Iowa. No returns from the other Western and Pacific States. The season was generally shortened by the cold weather.

COWS AND CALVES.

In New England the condition of cows was about average on the whole, Massachusetts and New Hampshire being slightly above, and Maine and Connecticut falling a little below. The number of calves dropped was somewhat above last year's returns in Maine, Vermont, and Rhode Island, but below in the other States of this section.

In the Middle States, the condition was average in New York, and below in the other States. New York and New Jersey report as many calves dropped as last year, while in Pennsylvania and Delaware there is a slight falling off.

The condition of cows was full average or above in North Carolina and Georgia, but in the other Atlantic coast States a decline is reported. Only South Carolina maintains last year's number of calves dropped, the other States declining from 1 per cent. in Maryland to 4 per cent. in Georgia.

Texas alone of the Gulf States maintains an average condition of cows, and a number of calves dropped equal to last year's. Mississippi shows a loss in condition of 3 per cent., and a decrease of 9 per cent. in calves. The other States of this region make a better report.

The inland Southern States show a decline in condition of cows, ranging from 2 per cent. in Arkansas to 14 per cent. in West Virginia. The loss in calves varies from 2 per cent. in Arkansas to 11 per cent. in West Virginia. In some localities our correspondents complain of neglect of cows, many of which did not give any attention to their calves.

All the States north of the Ohio River failed to maintain the condition of cows, the greatest decline being 7 per cent. in Wisconsin. Indiana dropped as many calves as last year, but all the other States came short, Ohio 6 per cent. In Medina, Ohio, there were more farrow cows

than ever known before. Even where bulls ran in the pasture with the cows the latter failed to get with calf. Effingham, Illinois, reports a great loss of calves from the severity of the season.

West of the Mississippi, Kansas shows an improved condition of cows, 3 per cent. above average, while the other States decline, Missouri as low as 17 per cent. In all the States of this section, except Missouri, the number of calves dropped equals or exceeds last year's. In some parts of Minnesota the severe winter caused many cows to drop their calves prematurely. In some localities in Kansas cows lost calves through defective feeding.

On the Pacific coast, California returns an improved condition of cows, and a decrease in calves; Oregon a slightly depressed condition of cows, but an increased production of calves.

SHEEP AND LAMBS.

The losses of mature sheep are reported to exceed two millions. The actual percentage of loss is made 6.7.

The small but well-kept flocks of Massachusetts show a loss of but 3 per cent. of grown sheep, and 6 per cent. of the lambs dropped. The greatest loss of sheep in the other New England States—9 per cent.—was in Rhode Island; the greatest loss among lambs dropped—13 per cent.—was in Vermont, where the winter was quite severe in the sheep-raising districts. New London, Connecticut, reports an unusual mortality, the cause of which is not stated.

In the Middle States, New York lost 6 per cent. of her grown sheep, and 16 per cent. of her lambs dropped; New Jersey, 5 per cent. of sheep, and 9 per cent. of lambs; Pennsylvania, 7 per cent. of sheep, and 13 per cent. of lambs; Delaware, 5.3 per cent. of sheep, and 20.3 per cent. of lambs. The mortality of these animals was greatly increased by the extreme cold weather, but it is remarkable that the greatest loss of lambs was in Delaware, the most southern of these States.

Along the South-Atlantic coast, Maryland reports the smallest mortality of sheep—6 per cent.; but the greatest mortality of lambs dropped, 17 per cent. In Virginia, the losses of these two classes, respectively, were 10 and 12 per cent.; in North Carolina, 10 and 13 per cent.; in South Carolina, 9 and 14 per cent.; in Georgia, 13 per cent. each. In Maryland, the lambing season was reported as very unfavorable.

In the Gulf States the mortality among sheep and lambs was very large. The large loss of lambs in many counties was attributed to the unusual cold of the lambing season and the lack of care on the part of farmers.

Arkansas and Tennessee lost 12 per cent. in sheep, while West Virginia lost only $7\frac{1}{2}$ per cent., and Kentucky 8 per cent. The loss of lambs was lightest in Tennessee, 12 per cent.; and heaviest in Arkansas, 19 per cent.; West Virginia lost 16 per cent., and Kentucky 17 per cent. Unusual snow-storms prevailed in many counties during the lambing season, causing great destruction.

North of the Ohio River, the rate of mortality declines. Here sheep-husbandry is more merciful in the treatment of the animals and more thrifty in its results. The severity of the winter, however, gives a high average mortality of sheep, ranging from 4 per cent. in Wisconsin to 7 per cent. in Indiana and Illinois; Ohio and Michigan average 5 per cent.; Indiana lost 14 per cent. of her lambs dropped; the other States lost 12 per cent.

West of the Mississippi River the smallest loss of grown sheep—5 per cent.—was in Nebraska; Kansas lost 6 per cent.; Iowa and Minnesota, 7 per cent.; Missouri, 11 per cent. The losses of lambs were as follows: Minnesota, 12 per cent.; Iowa and Kansas, 10 per cent.; Missouri, 18 per cent.; Nebraska, 9 per cent. Our correspondent in Butler, Kansas, touches the real point in the case when he attributes the mortality among both sheep and lambs to defective feeding. One flock in Ellis County, of that State, which dropped 3,000 lambs, did not lose 1 per cent.

California lost 6 per cent. of her sheep, and 9 per cent. of her lambs; Oregon, 10 per cent. of sheep, and 13 per cent. of lambs.

Table showing the condition of the crops, &c., on the 1st day of June, 1875.

States.	WINTER-WHEAT.		WINTER-RYE.		WINTER-BARLEY.	SPRING-WHEAT.	SPRING-BARLEY.	OATS.	SPRING-PASTURE.	CLOVER.
	Average condition June 1.	Average condition June 1.	Average condition June 1.	Average condition June 1.	Average condition June 1.	Average condition June 1.	Average condition June 1.	Average condition June 1.	Average condition June 1.	Average condition June 1.
Maine.....	100	101	.....	97	101	95	100	103	99	106
New Hampshire.....	100	100	.....	99	98	100	100	100	102	101
Vermont.....	87	95	.....	93	102	102	100	103	101	100
Massachusetts.....	.....	97	.....	.....	.....	80	95	108	99	100
Rhode Island.....	.....	80	.....	.....	.....	90	92	95	93	60
Connecticut.....	75	82	.....	100	83	98	86	96	77	102
New York.....	55	80	.....	97	93	92	102	105	94	89
New Jersey.....	62	81	.....	94	87	99	84	99	87	100
Pennsylvania.....	73	82	.....	.....	.....	.....	.....	90	76	92
Delaware.....	84	92	.....	.....	.....	.....	.....	80	82	87
Maryland.....	65	85	.....	.....	.....	.....	.....	95	75	75
Virginia.....	80	89	.....	.....	.....	.....	.....	90	75	74
North Carolina.....	98	95	.....	.....	.....	.....	.....	96	88	90
South Carolina.....	97	99	100	.....	101	.....	.....	92	96	100
Georgia.....	100	98	97	108	99	.....	.....	110	97	94
Florida.....	.....	100	.....	.....	.....	.....	.....	106	94	102
Alabama.....	104	103	.....	.....	.....	.....	.....	101	90	105
Mississippi.....	109	101	.....	.....	.....	.....	.....	115	109	115
Louisiana.....	75	99	.....	.....	.....	.....	.....	114	103	.....
Texas.....	115	106	108	131	108	105	102	111	101	102
Arkansas.....	95	107	.....	92	97	.....	.....	101	101	103
Missouri.....	90	94	100	.....	.....	.....	.....	85	84	80
West Virginia.....	60	74	.....	.....	.....	.....	.....	73	72	74
Kentucky.....	81	92	.....	.....	.....	.....	.....	93	80	80
Ohio.....	57	72	43	98	89	110	88	88	80	74
Michigan.....	80	92	94	112	100	96	99	100	100	97
Indiana.....	71	73	74	.....	.....	.....	.....	104	94	90
Illinois.....	64	84	.....	81	91	97	92	105	96	87
Wisconsin.....	98	98	.....	93	94	101	97	105	96	80
Minnesota.....	85	90	.....	99	88	99	99	100	99	92
Iowa.....	62	89	.....	93	97	97	94	98	97	88
Missouri.....	55	79	68	71	57	.....	.....	103	96	86
Kansas.....	97	101	.....	120	97	108	99	103	97	42
Nebraska.....	90	95	.....	115	105	98	98	110	96	80
California.....	65	66	67	99	52	108	54	96	108	105
Oregon.....	99	98	102	112	98	106	97	106	97	95

Table showing the condition of the crops, &c.—Continued.

States.	MAPLE SUGAR AND MOLASSES.		COWS AND CALVES.		SHEEP.		COTTON.		APPLES.		PEACHES.	
	Product of sugar this year compared with last.	Product of molasses this year compared with last.	Average condition of cows this spring.	How many calves have been dropped this spring for every hundred dropped last spring.	How many sheep in every hundred have been lost by disease or other casualties?	How many lambs have died in every hundred dropped this spring?	Average compared with last year.	Average condition June 1.	Average amount of bloom this spring.	Average condition of the crop June 1.	Average amount of bloom this spring.	Average condition of the crop June 1.
Maine.....	113	114	99	103	5	13	.....	.....	65	70	.....	95
New Hampshire.....	100	98	101	104	4	10	.....	.....	83	86	.....	100
Vermont.....	106	106	100	104	6	13	.....	.....	104	100	.....	94
Massachusetts.....	120	92	102	99	3	6	.....	.....	86	93	.....	101
Rhode Island.....	.....	.....	100	100	9	12	.....	.....	80	100	.....	100
Connecticut.....	95	95	97	97	5	10	.....	.....	50	70	.....	103
New York.....	85	85	100	101	6	16	.....	.....	78	75	.....	72
New Jersey.....	.....	.....	98	100	5	9	.....	.....	60	84	.....	55
Pennsylvania.....	75	80	97	99	7	13	.....	.....	60	70	.....	60
Delaware.....	.....	.....	97	97	5	20	.....	.....	95	55	.....	125
Maryland.....	.....	.....	94	99	6	17	.....	.....	90	90	.....	92
Virginia.....	87	96	95	97	10	12	.....	.....	81	90	.....	88
North Carolina.....	.....	.....	97	97	10	13	.....	.....	92	50	.....	83
South Carolina.....	.....	.....	98	104	9	17	.....	.....	98	50	.....	98
Georgia.....	.....	.....	101	97	13	13	.....	.....	90	30	.....	40
Florida.....	.....	.....	97	97	6	13	.....	.....	96	75	.....	95
Alabama.....	.....	.....	39	97	12	18	.....	.....	94	77	.....	80
Mississippi.....	.....	.....	97	91	11	16	.....	.....	104	73	.....	80
Louisiana.....	.....	.....	99	97	12	12	.....	.....	102	95	.....	103
Texas.....	.....	.....	101	97	12	12	.....	.....	101	97	.....	103
Arkansas.....	.....	.....	102	102	10	9	.....	.....	95	108	.....	98
Tennessee.....	85	88	98	98	12	19	.....	.....	100	90	.....	90
West Virginia.....	.....	.....	94	94	12	12	.....	.....	95	45	.....	105
Kentucky.....	103	102	86	99	7	16	.....	.....	60	40	.....	50
Ohio.....	80	94	96	97	8	17	.....	.....	75	33	.....	30
Michigan.....	61	61	95	97	5	12	.....	.....	85	30	.....	15
Indiana.....	84	94	96	97	5	12	.....	.....	25	80	.....	45
Illinois.....	64	69	92	100	7	14	.....	.....	60	55	.....	40
Wisconsin.....	89	88	99	97	7	14	.....	.....	65	69	.....	30
Minnesota.....	102	91	93	103	4	13	.....	.....	70	75	.....	.....
Iowa.....	55	64	96	103	7	12	.....	.....	97	85	.....	.....
Missouri.....	96	96	97	101	7	10	.....	.....	81	85	.....	40
Kansas.....	.....	.....	83	96	11	18	.....	.....	90	81	.....	80
Nebraska.....	.....	.....	103	100	6	10	.....	.....	40	60	.....	72
Nebraska.....	.....	.....	91	102	5	9	.....	.....	65	65	.....	25
California.....	.....	.....	102	98	6	9	.....	.....	51	90	.....	50
Oregon.....	.....	.....	97	102	10	13	.....	.....	110	100	.....	75

EXTRACTS FROM CORRESPONDENCE.

MIGRATION OF COLORED LABORERS.—*Giles, Tennessee*: There has been of late a great exodus of negroes to the promised land—Kansas. There is, in consequence, a great opening for industrious farm-hands, mechanics, and house-help. I know of no section offering so many advantages as East Tennessee.

DESTITUTION.—*Montgomery, Tennessee*: The saddest thing we ever saw among us is the gathering of people at the mills for food. Their money and their provisions are now gone. How hundreds of our people are to escape starvation till the crops come we cannot say.

GRASS-CULTURE.—*Guthrie, Iowa*: Many of our farmers, for fear of being driven to grass, have concluded to go to grass. Tame grasses are to be seen in almost every neighborhood. My Alsike clover came through the winter in good order. Rye also finds favor in some places for pasture; it has stood the winter well.

CO-OPERATIVE STOCK-SALE.—*Frederick, Maryland*: The Patrons of Husbandry of this county held a "stock-sale" April 27, which was quite a success. It is to be followed semi-annually by others. The Patrons have started a cheese-factory on the co-operative plan. It promises well.

REED-HAY.—*Edgecombe, North Carolina*: Our farmers, to a considerable extent, are using reeds for long forage. The old reeds are cut down and the young sprouts from the roots are mowed, making a very superior hay, which is well relished by horses.

DEPARTMENT SEEDS.—*Cherokee, Texas*: I can fully substantiate the remarks of your correspondent in Waller, Texas, in regard to the seed sent out from the Department. Very few failed to germinate, and the product is the best of their kind. *Giles, Tenn.*: A poor man residing near me says that the Fultz wheat which he received from the Department through me two years ago will benefit him this year to the extent of \$200. It is the finest wheat in the neighborhood.

HUMANE TREATMENT OF LIVE STOCK.—*Lincoln, Kansas*: Sheep have done better the past winter than I ever knew them to do before. Stockmen of all kinds are beginning to learn that it pays to take better care of their stock through the winter than they have been doing heretofore.

CORN-CULTURE.—*Clay, Indiana*: In 1874 I raised an acre of a new variety of corn; product, 100 bushels. The ears were from 9 to 14 inches long, with 16 to 22 rows of grain on each. Some ears counted contained 1,430 grains. It was planted May 15, on a very rough sod of new ground, without manure. It ripens before the October frosts.

MORTALITY AMONG OLD PEOPLE.—*Trimble, Kentucky*: More old inhabitants of our county have died of the prevailing pneumonia than ever before. The type of disease is very severe.

ORCHARD-GRASS.—*Butler, Kansas*: I sowed some orchard-grass seed this spring, and some of the grass has already attained the height of 15 inches.

A FINE AGRICULTURAL REGION.—*Perry, Tennessee*: We have a fine county. It is situated, for the greater part, between Buffalo and Ten-

nessee rivers; the rivers through this county run almost parallel, and are about twelve miles apart. At an average distance of about one and one-half miles from Buffalo River, and about four miles apart, creeks arise, which flow westward into Tennessee River, affording inexhaustible supplies of never-failing water. We have the greatest variety and quantity of timber; a great many of our oaks and poplars measuring 21 feet in circumference, and frequently 60 feet to the lowest limb. The river and creek bottoms—one-fourth of the county—are exceedingly fertile, yielding, when properly cultivated, 50 bushels of corn or 40 bushels of wheat per acre, and grow all the grasses in luxuriance without any manure. Our climate is all that could be desired: winters mild, summers not too hot, plenty of rain about equally distributed throughout the year, and a good home-market. Still, despite all these advantages, we make a specialty of the pea-nut, which is exhausting our soil, destroying the prosperity of the land-owner, and bringing the renter to bankruptcy. That no community of farmers can prosper by the cultivation of a specialty was first taught me by the present commissioner, and experience has since verified the truth of his position. To thrive, we must diversify our crops. Acreage of pea-nuts 50 per cent. more than an average, and the crop is promising—to bring us to the poor-house.

CLAWSON WHEAT.—*San Joaquin, California*: When sowing my wheat in December last, I left a strip of land 10 feet wide and 150 yards long unsown. In February, when the wheat sown in December was about 8 inches high, I sowed on the land so reserved 6 pounds of Clawson wheat, received from the Department. We have only had one rain since. Some of the grains never germinated, and when it came up the stools were about 12 inches apart. I never saw any grain stool or tiller out as it did. To-day it stands higher than the wheat on both sides of it, sown in December. The heads will average 6 inches in length. It is now in the "dough," but with such large heads the probability is the grain will be more or less shrunk. The ground is very dry now, and rain is not to be expected after this. So far I think very highly of it.

"FRENCH TOBACCO."—*Gallatin County, Kentucky*: The term "French tobacco" is old, having been in use by tobacco-growers in Northern Kentucky as far back as I can recollect, which is at least forty-five years. Why this term was first applied to that particular blight I cannot state, but time and use have so sanctioned it, that its application is well understood by most tobacco-growers. The causes that produce the blighted tobacco called French are local. There are certain localities, in flat, beech-timber lands peculiarly adapted to this kind of growth under any circumstances. The best remedy or preventive is early and prompt cultivation as soon as the plant has shown any signs of growth after being set, but never working or stirring the soil when wet. A very wintry or wet season will produce more or less French tobacco on almost any kind of soil. The little attention or work that can be given under such circumstances is not sufficient to prevent this kind of growth. A lazy man, on soil not well adapted to the growth of the plant under unfavorable circumstances, will be sure to raise the worthless French tobacco.

A FLOOD IN TENNESSEE.—*Sevierville, Sevier County*: It commenced raining here on the 23d of February, and poured down all day and night. At 3 o'clock in the afternoon on the 24th, Little Pigeon River was 4 feet deep in our streets, our town being on the level river bottom between the

east and west forks. The water subsequently fell back about 2 feet, but at 9 p. m. it commenced rising again and continued to rise till $4\frac{1}{2}$ a. m. on 25th, when it was 10 feet deep in the streets, and was in every house in town. All had to go up stairs, and a sad time we had. No human lives were lost, but the destruction of property was great—not less than \$100,000 worth in the county. Nearly every mill and saw-mill was carried off, and not a bridge is left. River farms were swept of everything, and some of the finest were so washed that they are ruined. Nearly all the grain and hay stored along the French Broad and Little Pigeon Rivers was swept off. Cattle, sheep, hogs, some horses and cows, and nearly all the calves in Sevierville were drowned.

THE BUFFALO-GNAT.—*Fayette, Tennessee, May 10*: This section has suffered very great loss of mules and horses by the buffalo-gnat. The loss of Fayette County is estimated as high as \$500,000 by some. This however, I think an exaggeration. I have been here nine years, and this is the first season in which they have done any serious damage. They appear regularly in the river swamps every year, and every planter has a remedy. The best and only sure remedy is to put the stock *at once* in a dark stable and build smokes. Various preparations for greasing the vulnerable parts are recommended; the best is a half-and-half mixture of pine-tar and lard. What is remarkable about this visitation is that those of our citizens who have lived in the swamps and thought they knew all about it applied their grease and kept on working, and yet lost heavily, while those who knew nothing about it, becoming alarmed, stabled their animals and lost nothing. The visitation lasted about three days. Death doubtless is partly caused by loss of blood, but mainly by poisoning the circulation.

AGRICULTURAL LIGHTS AND SHADES IN MISSISSIPPI.—*Hinds*: In some townships every man, woman, and child appears to have a worthless dog, very hungry, and generally mangy. One consequence is that sheep cannot be trusted out of sight by day or out of the yard by night. Crops are looking well, especially corn. People are working better and buying less from market than at any time in the last ten years. We are hopeful of better times. The only thing we have to fear now is reckless extravagance of State and county officials.

STATISTICS OF DAIRY FACTORIES.

The following averages of milk and cheese production are deduced from statements of dairy factories in the State of New York. Many factory reports have been set aside on account of omissions of necessary particulars, an omission the more to be regretted from the fact that factory men generally have not been in the habit of publishing accounts of their operations, and hence material of this description has never been abundant. In reducing pounds of milk to gallons, we take the specific gravity of milk of fair quality at 1.03, accepting this as sufficiently determined by the investigations of Dr. Voelcker, of England, and other chemists who have had large experience in examinations of milk. The weight of the standard gallon (distilled water) in this country being officially placed at 8.3389 pounds, we hence calculate the average weight of one gallon of milk at 8.589 pounds.

Reports of one hundred and seventeen cheese and butter factories in

the State of New York, for the season of 1874, show the following particulars: Aggregate of average number of cows for the season, employed by these factories, 36,429; milk received, 118,093,222 pounds; average per cow 3,241.73 pounds, or 377.42 gallons; lowest average number of cows for the season employed by a single factory, 55; highest, 800. General average 311; average length of factory season, averaged on the number of factories without regard to size, 6.24 months; regarding the average number of cows in each, 6.44 months. Of the one hundred and seventeen factories five are exhibited as devoted wholly or in large part to butter; one hundred and twelve show an average of 331 pounds of cheese per cow; average amount of milk required for one pound of cured cheese, 9.82 pounds. These one hundred and twelve factories also report 36,141 pounds of butter, averaging 1.02 pounds per cow. Four factories, averaging a season of 9.58 months, exhibit 1,388 cows as the average number for the season, and 4,356.8 pounds, equivalent to 507.25 gallons, of milk per cow; each cow averaged 451.9 pounds of cheese and 8 pounds of butter. These averages of milk and cheese must be somewhat above the true average per cow for the season, since the number of cows contributing to the factory is always largest during the largest flow of milk. The factories rarely open with their full quota, and in the fall a part of the cows are withdrawn for butter-making on the farm.

So far we have considered only the average number of cows employed by the factory for the season, but ninety-nine of these factories report for 1874 both the average for the season and the greatest number contributing at any time. They exhibit an average for the season of 31,405 cows, but a "greatest number" of 36,084, being 14.89 per cent. in excess of the average number. In the tables of the New York State census of 1865, one hundred and twenty-seven factories, reporting for the season of 1864, show 16.62 per cent. excess of "greatest number of cows" over "average number," and one hundred and thirty-three factories show an average of 307 cows per factory.

The tables presented in the reports of the American Dairymen's Association are quite imperfect as regards the average number of cows per factory for the season. It appears that the "greatest number" is often put in place of the average, and *vice versa*. The particulars in the following table have been collected from detailed statements appearing in these reports:

Year.	Number of factories.	Average number of cows.	Average length of season. *	Milk received.	Cheese made.	Average of cheese per cow.
			<i>Months.</i>	<i>Pounds.</i>	<i>Pounds.</i>	<i>Pounds.</i>
1863.....	12	4,529	For eleven factories.....6.4	15,575,583	1,565,723	345
1864.....	19	8,161	For seven factories.....5.9	25,238,505	2,574,101	315
1865.....	25	14,049	For twelve factories.....7.3	48,784,656	4,932,656	351
1866.....	21	10,056	For eleven factories.....6.6	36,711,856	3,760,992	374
1867.....	21	7,209	For five factories.....6.1	23,904,722	2,425,816	336
1868.....	16	6,895	For eight factories.....6.4	21,650,993	2,195,700	318
1869.....	9	4,310	For eight factories.....6.1	14,127,004	1,464,824	339
1870.....	6	3,495	For five factories.....7.1	11,153,377	1,124,034	321
1871.....	4	2,015	For three factories.....6.3	6,633,601	678,634	336
1872.....	3	1,665	For two factories.....8.1	6,130,896	626,472	376
1873.....	3	1,660	For three factories.....7.4	5,515,451	559,119	326

* Many factories did not report the length of season.

For 1864 we here give only those returns that are not presented in the State census exhibit of one hundred and thirty-three factories in 1864.

For all the reports in the above table the average of milk per cow, for the season, is 3,363.7 pounds, or 391.63 gallons; of cheese, 342 pounds; of milk for one pound of cheese, 9.833 pounds. Average length of season of seventy-five statements, 6.7 months. Some of the factories reported butter from whey or from cream of partly-skimmed milk. At many factories patrons were allowed, during a certain portion of the season, to skim night's milk.

The average product per cow for 1864 was relatively small, owing to unusually severe drought during the summer. The State census of 1865 in reporting statistics of one hundred and thirty-three factories, each employing 300 cows or more, exhibits the average of milk per cow at 2,801.9 pounds, or 326.21 gallons, for a season, averaging about 6.1 months; the cheese-product averaged 283 pounds per cow, showing 9.915 pounds of milk for one of cheese; aggregate average number of cows for the season, 67,034.

In illustration of the differences between herds contributing to factories, we present certain averages obtained by summarizing statements of fifty-seven factories for 1874, which, in each case, give statistics of best dairy and poorest dairy for the season. Average length of season, 6.5 months. Average net receipts, by patrons, for 100 pounds of milk, \$1.229, or about 2.63 cents per quart. Average net receipt per cow, by patrons, \$40.336, showing 382.11 gallons of milk per cow. Best dairies, average net receipts per cow, by patrons, \$52.99, showing 501.99 gallons of milk per cow. Poorest dairies, average net receipts per cow, \$30.63, showing 290.17 gallons per cow. Excess of average yield, per cow, of best dairies over that of poorest dairies, 211.82 gallons, or 73 per cent. The statement of the well-known Weeks factory, in Oneida County, exhibits, for a season of 7.2 months, a net receipt by patrons, per 100 pounds of milk, of \$1.2825; average number of cows for the season, 750, yielding 425.94 gallons per head. Best dairy, 10 cows, average net per cow, to patrons, \$77.85, showing 706.73 gallons per cow; poorest dairy, 10 cows, net per cow, \$37.11, showing 336.89 gallons per cow. Excess of yield per cow, of best dairy over poorest, in 7.2 months, 369.84 gallons, or nearly 110 per cent. The factory of E. L. Stone, in Mannsville, Jefferson County, reports one cow which yielded in 7.3 months 7,937 pounds of milk, or 924.08 gallons, and one which yielded for the same season 7,690 pounds of milk, or 895.33 gallons. Net money to patrons, \$91.36, and \$90.82.

We return to the point of the average yield per cow, for the factory season, and for a term of years, in the New York dairy regions. We have had in review three hundred and eighty-nine factory statements, of which one hundred and fifty-two, or 39 per cent., are for the exceptionally unfavorable season of 1864, and this large proportion of low exhibits will prevent us from combining all of the statements for an average for a course of years. Omitting, now, the statements for 1864, we have two hundred and thirty-seven factory reports, representing 92,312 cows, aggregate of averages for the season, and a yield per cow of 3,339.5 pounds of milk, or 388.81 gallons, for a season of a little more than six months. From two hundred and thirty-two of these statements we obtain an average of 340 pounds of cheese per cow, for the factory season. Judging from all attainable data, these figures for milk and cheese are the highest at which the factory average for a term of years can be placed; and we have already shown that, from the manner in which the averages are made up at the factory, the true yield per cow must fall below even the factory average. But the approximate which we have attained is sufficiently close to serve a valuable purpose

as a means for comparison, and for the correction of frequent exaggerations of general dairy production.

AVERAGE YIELD OF MILK-HERDS.—Dr. E. L. Sturtevant of Massachusetts, furnishes an account of the milk-product of a herd of cows in Pennsylvania, comprising five Ayrshires, three and one-half years to nine years old; one Jersey, ten years old; two Jersey grades, six years and seven years old; and two Durham grades, four and one-half years and nineteen years old. The account is for the year April 1, 1874, to April 1, 1875, and shows 4,148.9 pounds of milk as the average yield per cow, which, at 8.589 pounds of milk per gallon, would be equivalent to 483 gallons. Average number of days in milk, 286.7.

A statement of the Messrs. Sturtevant on their herd at South Framingham, Mass., exhibits the following particulars: In the first year of the record the herd was composed entirely of "natives," but it was afterward, by gradual elimination and substitution, converted into an Ayrshire herd. In the second year the herd included one Jersey and four Ayrshires; in the third year, two Jerseys and four Ayrshires; in the fourth year, thirteen Ayrshires, the rest being natives. In the subsequent years the cows were all Ayrshires. In the table we convert pounds of milk into gallons, on the above-mentioned basis:

Year.	Number of cows.	Average number of days in milk.	Average yield per cow.	Year.	Number of cows.	Average number of days in milk.	Average yield per cow.
			<i>Gallons.</i>				<i>Gallons.</i>
1867.....	25	278	553.6	1871.....	14	296	585.2
1868.....	29	301	562.8	1872.....	13	300	704.0
1869.....	20	292	487.7	1873.....	13	291	636.0
1870.....	18	298	671.6	1874.....	7	316	660.7

Reducing the record of eight years to the basis of one year, we have 556.4 gallons as the average annual yield per cow of 68 natives, and 639 gallons as the average annual yield of 68 Ayrshires.

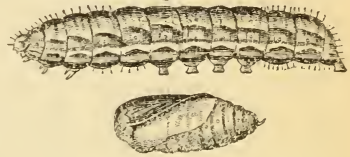
From the records of the Agricultural College of New Jersey we summarize the yield of a herd of Ayrshires, short-horns, and natives as follows: For the year November, 1870, to November, 1871, seven Ayrshires and five natives, average yield, 735.2 gallons. Average of Ayrshires, 782.6 gallons; of natives, 669 gallons. For the year November, 1871, to November, 1872, six Ayrshires, two short-horns, and seven natives, average yield, 742 gallons. Average yield of Ayrshires, 814.5 gallons; of short-horns, 557.7 gallons; of natives, 732.5 gallons. For the year November, 1872, to November, 1873, five Ayrshires, one short-horn, and six natives, average yield, 674.7 gallons. Average yield of Ayrshires, 663.9 gallons; of natives, 652.7 gallons; yield of one short-horn, 867 gallons. Two of the Ayrshires were very old; one of the short-horns never recovered from injuries received during importation, and died in 1873. In the first year of the record one of the natives was only six months in milk. The two short-horns were actually connected with the herd in 1870-'71, but are not here reckoned for that year, their yield having been greatly affected by the voyage of the previous year.

ENTOMOLOGICAL RECORD.

BY TOWNEND GLOVER, ENTOMOLOGIST.

CUT-WORMS.—Cut-worms or surface-grubs are the caterpillars which eventually produce dark-brown or gray moths, so plentiful in houses during the evening, flying around lights, and during the day remaining motionless on walls or hiding in corners. These insects have been very abundant and injurious during the present season in many parts of the United States, the caterpillars destroying all kinds of garden and field produce, especially vegetables, as cabbage, &c., and in the fields injuring maize or corn when young and tender. In the more southern States it has been reported as particularly attacking young cotton-plants this season, as will be shown by the following extract from a letter received from a correspondent, Mr. J. Pettigrew, of Charleston, Franklin County, Arkansas, who has given a very interesting account of the damage done by this insect in his neighborhood, and who, also, to a certain degree, has described its habits. Mr. Pettigrew writes :

Fig. 1.



I have sent you some specimens of the cut-worms which have been exceedingly destructive to many species of vegetation in this county. They appeared about the 1st of April, and have destroyed hundreds of acres of cotton, which has had to be planted over. In the vegetable-gardens, cabbages, onions, and tomatoes are the special objects of their attacks, and they have greatly damaged the potato-crop. During the night they feed, and with the appearance of the sun they seek a retreat from its rays by getting under something, or by burrowing in the ground. In the cotton-field they feed during the day. The crust of the ground, raised by the spreading of the cotton-seed, affords them a shelter from the sun. The worm has been more destructive here this spring than at any time in the history of the country, but they are now disappearing.

The moths of this insect are very inconspicuous in markings, and are almost all of a gray or brown color, with ornamentation of a dark brown or almost black in some species, but more faint and indistinct in others. When settled on walls or in crevices during the day the moths assume a triangular or rather cone-shaped attitude, with the upper wings closely folded over their backs. The cut-worms themselves (Fig. 1) are fat, greasy-looking, naked or hairless caterpillars, of a gray or brown color, marked and shaded with a darker brown or gray on each segment of their bodies, and when nearly full-grown they have a disproportionately small head. When disturbed they often assume more or less of a semicircular or circular form, and remain motionless as long as molested. (Fig. 2.) When thus rolled up they seem so fat and full of juice that their skins appear almost tight enough to burst open.

Fig. 2.



The chrysalids (Fig. 1, lower figure) are formed more or less deep in the ground, and the early brood of moths emerge from the earth in a short time after the caterpillar has buried itself, while the late brood remain as pupæ or chrysalids all winter, and are the small brown motionless bodies or cases so often plowed up and overlooked by the horticulturist or farmer ; some species, however, remain as caterpillars through the winter and only assume the chrysalis form late in spring or early in summer.

There are a great many species of cut-worms or *Agrotis* in the United

States, and all of them are more or less similarly marked, and of similar habits; some feed during dull, cloudy days, while others feed only at night, or in the evening or morning; some dig holes near the plants they injure, and draw the leaves they have cut from the plants into their hole or receptacle to be eaten at leisure during the day, while

Fig. 3.



others attack only young plants, eating them off close to the ground; one or more species are said to climb trees and shrubs and cut off their shoots, leaves, and buds.

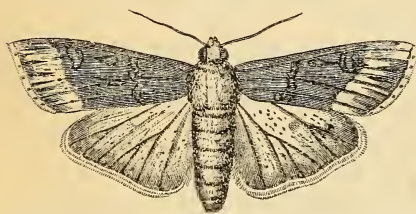
Among the most common of the cut-worms in this part of the country is the "dingy cut-worm," *Agrotis jaculifera*, (Fig. 3,) which cuts off the plants near the surface of the ground, and either eats them at

night or draws them into the hole it inhabits during the day, and devours them at leisure. A species of digger-wasp (*Ammophila*) is said to destroy this cut-worm, carrying the caterpillars to its nest and storing them as food for its young.

Agrotis suffusa, (Fig. 4,) the dark sward-grass worm or moth, is of somewhat similar habits; the caterpillar of the lance rustic, *Agrotis telifera*, (Fig. 5,) or greasy cut-worm, is nocturnal, and an omnivorous feeder. This insect by some is said to be the same as *A. suffusa*. The unarmed rustic, or variegated cut-worm, in the young caterpillar state, before the first moult of the skin, is said to be somewhat gregarious, and to have a peculiar leaping gait, and to live on leaves, but after the first moult they lose the habit of leaping, and begin to show the true cut-worm habit of hiding in the day under the surface of the ground, and of cutting down vegetables, &c.

Agrotis clandestina, or the clandestine owlet moth of Harris, is said to drag its food, consisting of leaves of young plants, to places of conceal-

Fig. 4.



ment, under stones, &c., and also to have the habit of climbing trees and shrubs, to cut off their leaves and blossoms during the evening. The caterpillars of *Agrotis subgothica*, (Fig. 6,) or the western striped cut-worm, eats stems and lower leaves of plants, and the insects appear in summer, while the cabbage cut-worm

of Harris, *Agrotis devastator*, deposits its eggs in the autumn at the roots of plants; these are said to hatch in May, and while in the caterpillar state (about four weeks' duration) feed upon the lower leaves of vegetables. The caterpillars of *Agrotis scandens*, or the climbing rustic, at night ascends trees and shrubs to cut off their blossoms and leaf-buds.

There are other species of cut-worms known to our naturalists, which we will not mention in this article, as enough has been said to give some general idea of the habits and food of the principal species of cut-worms in our own neighborhood, all of which are shared by the *agrotidæ* or cut-worms in general.

Many of these insects are destroyed when in the caterpillar state by the footless larva of a *Tachina* or two-winged fly, which lives in their bodies. Many species of ichneumon-flies also destroy them in a similar manner. Wasps carry them off to their nests as food for their young, while multitudes of the grubs are destroyed by crows, black-birds, &c., when plowed up in the spring and lying helpless on the surface of the

ground. Fall plowing will turn up and expose these insects to the inclemency of the winter. Manuring the field with sea-mud is said to be useful.

Searching for the worms when they come out to feed, or digging them from their holes near the plant, and killing them, is doubtless the most effectual remedy we can employ. Curtis says one-quarter ounce of salt dissolved in a quart of water will drive the grub away, and preserve the plant till washed off by rain. "Tobacco-water will kill them if it comes in contact with them. Quicklime will also destroy them if put on the plants when wet, and dry soot dug into the ground is very offensive to the grub." Suds made of one pound of soap to ten gallons of water, and applied warm, will cause them to dart out, when they can be immediately killed. Four ounces of aloes dissolved in a gallon of water and applied to the plants, is said to preserve them from the cut-worm. Smooth holes made with a rake or hoe-handle near the plants will serve as traps into which the worms fall, and may there be destroyed. Coal-tar and water, a spoonful of the former to a gallon of the latter, will, it is said, drive the worm away without injuring the plant. Where a few choice plants are to be protected, this may be done by wrapping stiff paper or walnut-leaves around the stem when setting them out, leaving the paper a little above ground, and an inch or two below. Cow-dung stirred in water, and poured around the plant so that the solid part will remain and form a hard surface, through which the worm cannot penetrate, has been recommended. For a similar insect in Europe, Köllar advises lime-ashes applied to the land, or lime-water in damp weather. If the female moths are attracted by sweet liquids, many of them may be killed, and as they are also lured by lights in the evening they may be destroyed in this manner to some extent.

Fig. 5.



Fig. 6.



PHYLLOXERA VASTATRIX IN AUSTRIA.—The following account of the appearance of the *Phylloxera vastatrix* in Austria is condensed from a late official publication of the Austrian minister of agriculture:

In France, in 1865, at Pujaut, near Roquemaure, department du Gard, for the first time an insect was observed injuring the roots of grape-vines so that they died. The occurrence excited chiefly the interest of scientists, and it was believed to be the same insect found in galls on grape-leaves by A. Fitch in North America, and by him called *Pemphigus vitifolia*. The newly-discovered insect, first scientifically described by Planchon, evidently belonged to the *Phylloxera** family, and on account of the extraordinary damage its increasing numbers inflicted on the vineyards, it was called *vastatrix*.

In 1868 France awoke to the necessity of adopting energetic measures for the suppression of this scourge, which almost unnoticed had assumed fearful dimensions. The question was asked, (and it is not yet an-

* The name *Phylloxera* comes from *phyllon*, a leaf, and *xerainein*, to dry, a name given by Fouscolombe in 1834 to the species found on oak trees. Four species of *Phylloxera* are now known; viz: *P. quercus* on summer oak, *Quercus robur*, L.; *P. quercus*, on white oak, *Q. alba*; *P. Lichtensteinii* on *Q. coccifera*; *P. vastatrix* on *L. vitis*. The first three are probably harmless.

swered,) is this insect of native or foreign origin? In some places, as Bordeaux, they believe in its introduction on American vines, which nevertheless withstand its attacks much better than their own. Then there is the fact that, except in a few instances in France, it is only found on the roots in Europe, which renders it possible we have two species of insects to deal with. A French scientist, Loarer, thinks the *Phylloxera* was introduced from the East Indies* by eggs brought to Marseilles in bales of merchandise. But after all there is nothing to hinder the presumption that the insect has always accompanied the vine,† though formerly unnoticed, and that favorable conditions of weather, &c., have enabled it to increase at the present time with such alarming rapidity.

The number of remedies which have been proposed and tried is enormous. The Herault commission alone experimented with 124 in the domain of Las Sorres from January to June, 1873, including the following substances: Verdigris, phenic acid, sulphuric acid, garlic, aloes, alum, ammonia, nitrate of silver, potters' clay, arsenious acid, arsenic sulphide, asafetida, gypsum, calomel, camphor, carbonate of lime, caustic lime, chloride of lime, carbonate of potash, wood-ashes, charcoal in powder, bone-meal, chlorate of potassa, corrosive sublimate, chrome, sealing-wax, decoction of poppies, leather-scrap, blue vitriol and other salts of copper, sea-water, compost, turpentine, sulphate of iron, horse-dung, wood-tar, Peruvian guano, bran, sulphur, oil of juniper, olive-oil, naphtha, petroleum, potassic permanganate, mercuric sulphate, saltpeter, bone-charcoal, nux-vomica, walnut-leaves, benzine, ground apatite, goat-hair, sulphate of potash, pine sawdust, poudrette, Peruvian bark, sea-sand, white and black soap, slate-meal, flowers of sulphur, and sulphur in various forms and combinations, soot, tobacco, oak-bark, rape-seed cake, pignuts, sesame, castor-oil, urine, vinegar, creosote, carbolic acid, suds, &c. Some of these are used in mixtures the composition of which is unknown. To these remedies must be added various modes of treatment, such as boring the trunk of the vine and impregnating the sap, the planting of certain herbs near the stock, as hoarhound, garden cress, chamomile, pyrethrum, &c.; also the introduction of natural enemies of the *Phylloxera*, as lady-bugs, pselaphus, chrysopa, ants, and spiders. None of these have proved completely successful remedies. Many of them certainly destroy the insects, but the difficulty lies in obtaining the necessary contact, which it is often impossible to accomplish.

In 1869, Louis Faucon proposed to flood the vineyards, and the remedy proved successful. It can, however, only be applied on level grounds, where the necessary supply of water can be obtained. Recently it has been said only to prove effectual on sandy soil with clay subsoil, a condition not always to be obtained. Perhaps in some cases the water destroys the insect, but not its eggs.

* Drouyn de l'Huys, in his address before the grape-growers' congress at Montpellier, 26 Oct. 1874, appeared to agree with this opinion. In the East Indies proper there are, however, no grape-vines, these being grown only in Afghanistan and Nepal.

† Experienced gardeners in Klosterneuburg have stated that the vineyards in which the *Phylloxera* first appeared were destroyed about a hundred years ago by some cause which was never satisfactorily explained. And it is said that in Hungary, near Szegedin and Theresienopol, between sixty and one hundred years ago, an insect appeared on the roots of the vine as destructive as the *Phylloxera* now is. It was finally extirpated by the use of ashes and lime. In the neighborhood of Gorz, fifty to sixty years ago, a vine-root louse appeared that was checked by a wet season; and it is to be observed that a special prayer in the Talmud includes the vine-louse. But these allusions may refer to something different from the *Phylloxera*.

Lichtenstein observes the insect is not found in sandy soil, and proposes dressing the vine-roots with sand by raising them as far as possible and placing a layer of sand in the hole before relaying them.

Thenard, in 1873, found that the vapor of carbon disulphide penetrated the soil to a considerable distance from the place in which the liquid was deposited, killing the insect and its eggs; but it also destroyed the vines, so that it can only be applied when necessity arises for the extermination of the pest.

In the report of Dumas to the Paris Academy of Science, June 4, 1874, the following summary remedial measures are recommended: As preventive, when the plague first appears, all infected stocks should be dug up and burned, and the soil thoroughly poisoned with carbonic disulphide or some of its alkaline salts. Heavy manuring and the application of poisons is recommended when the evil has obtained such foothold as to render its extirpation doubtful. New vineyards should only be planted on sandy ground or ground that may be flooded.

So little has been accomplished by way of remedy, that, in consideration of the frightful loss resulting in 1874 from the rapid spread of the *Phylloxera*, the French government offered a prize of 300,000 francs for a successful cure. The insect has totally destroyed 200,000 hectares of vineyards in the valley of the Rhone, and has attacked nearly a million. It was observed in the forcing-houses of England and Ireland, by Westwood, in 1863. The Austrian department of agriculture was informed of the advent of the *Phylloxera* in France by the zoölogical-botanical society of Vienna, in 1869. The managers of the crown-lands and the agricultural societies in vine-growing districts were immediately requested to carefully watch for symptoms of the scourge, and the import of vines from France to the school at Klosterneuburg was prohibited. But early in the summer of 1872 Dr. L. Rösler discovered the insect in the experimental garden of pomology at Klosterneuburg, on some unhealthy-looking Clavner stocks, whose backwardness had been attributed by the working gardeners to the want of the usual protection of snow the preceding winter. About three klafters distant were a number of American vines of the Clinton variety, partly from Baden and partly direct from North Hoboken, in New Jersey, planted before any suspicion had arisen that the *Phylloxera* was introduced from North America. But notwithstanding these and all other American varieties grew with wonderful luxuriance, an examination of their roots proved them to be completely colonized with *Phylloxera*. Baron Von Babo, director of the school, considers this fact as establishing a strong probability that the insect was introduced by the American vines, but of course it is impossible to assert it as a positive fact.

During 1873 no perceptible increase of the malady in the experimental gardens was observed. Every conceivable method of combating the pest was adopted, and Dr. Rösler reported that vines which in 1872 were evidently attacked appeared to be freed from it, and were pushing vigorous young roots, especially where manure was dug in deeply.

But in 1874 a mild winter was followed by a notable increase of the insects. Cold winters and wet summers are hence considered as detrimental to its extension. Also, this year, the appearance of the winged form gave rise to dread of its rapid extension; examination with the microscope proving that at least a part of the flying insects were females laden with eggs. Notwithstanding the persistent efforts to unveil its life-history, it is only recently we are enabled to present a detailed account.

The vine-louse, *Phylloxera vastatrix*, Planchon, belongs to the class *Insecta*, order *Hemiptera*, sub-order *Homoptera*, family of plant-lice, *Phytophthires*, tribe of leaf-lice, *Aphides*, in which are numerous genera, as *Rhizobius*, *Eriosoma*, *Chermes*, *Lachnus*, *Aphis*, &c. The vine-louse appears to belong to this last, though Cornu places it between *Aphis* and *Coccus*. It is so small as scarcely to be distinguished by the naked eye, oval, with a thick body, and blunt abdomen composed of seven rings, six slender legs with short feet, a small, beak-shaped, incurved head, with a proboscis composed of four sucking-tubes, that usually lie on its breast. Full-grown insects are somewhat warty, and are a bright yellow.

Like other leaf-lice, they increase partheno-genetically; the males first appear just before winter in small numbers in the last brood of the season, and after impregnation the females lay eggs which develop the following spring. These eggs produce only females, called nurses, who, without further commerce, lay eggs, and are also, to some extent, said to be viviparous. This last fact has rarely been observed in the *Phylloxera*, and is doubted by the French Academy. This method of propagation continues until the power of a sexual increase is exhausted, when males, usually winged, are again developed. At the same time the so-called "nurses" become nymphs, or dark-colored, winged, and perfect insects.* By this alternation of generation the increase of numbers is enormously rapid. Reaumur places it at 6,000,000,000 from one female in a summer, but this is too low; for if a nurse *Phylloxera* lays 30 eggs, which produce perfect insects, their descendants in the twelfth generation will number 17,714,700,000,000,000 individuals. The injury caused by a single puncture such as they make in the bark of the roots, or even several, is very slight, but when multiplied by such immense numbers, is ample cause for the serious damages which have been inflicted on the European vineyards.

The food of this class of insects is the sap of plants, which they usually obtain from the leaves, on which they form galls. Some of the species change their host-plant with each change of form, the perfect insect feeding on a different plant from that on which its nurse-mother fed; and this fact is said by Lichtenstein to have been observed with regard to the *Phylloxera*, but it cannot be considered as fully established.

The vine-louse differs from the rest of its kind in living under the ground, (though in America it is said to form galls on the leaves. They have only been observed in Europe by Planchon, Signoret, and Laliman, and the insects were not entirely identical with those on the roots.)†

The full-grown insect sits motionless on the roots, having inserted its sucking-tubes, of which, according to Rösler, it uses two to withdraw the sap, and the other two to pour into the wound a liquid excrement, which, perhaps, is more injurious than the wound itself. The resulting semi-transparent swellings are the most certain indication of the pres-

*According to Balbiani's latest researches, there are at least four different forms of the insect capable of reproduction, not counting the eggs or the nymphs.

†Persons unacquainted with the *Phylloxera* are liable to mistake for it the grape-mite, (*Phytophus vitis*.) This insect belongs to the *Arachnida*, and eats the buds and young leaves in spring. Its presence is readily perceived by the bladdery galls on the upper surface of the leaves, in which a pinkish, spore-like dust will be found, consisting of these mites laying their eggs. They may be destroyed by gathering and burning the vine-leaves in the fall, so that no eggs shall remain over winter. They are about .032—.098 millimeter in diameter, the females larger than the males. They are peculiar in their organs of respiration, which open into the intestinal canal. It is not yet certain if the application of sulphur is as destructive to this pest as it is to the *Oidium*. Several other mites, as *Acarus* and *Haplophora*, (Riley,) live on the vine.

ence of the *Phylloxera*, and they speedily decay. The insect first attacks the surface-roots, and, when these are exhausted, migrates to those which are larger and deeper seated. They prefer the angles formed by branching roots, and lay their eggs in curved lines by swinging round their abdomens. Planchon saw one lay 30, Rösler 42, and Signoret 200, which hatched in from two to three days. Unlike the parent, the young *Phylloxera* is very active, and runs about till it finds a suitable spot on which to begin sap-sucking. It now rapidly changes its skin; how many times is uncertain. But the oak *Phylloxera*, its nearest relation, changes four times.

They begin to lay eggs when from eight to fifteen days old, different observers not agreeing as to the exact time. The yellow color of the living insect changes when dead to a light brown, as also the eggs, and when destroyed by carbon disulphide it becomes a dark gray, almost black. By the loss of sap, perhaps also by the effect of a poisonous excretion introduced into the wound made by the trunk of the *Phylloxera*, the vine is injured. If but few are present, or if it is endowed with strong powers of resistance, like the American vines, the presence of the enemy will hardly be noticed. But if they increase, as usual, by the second year the vine will show that it is diseased. The leaves turn yellow, the stock becomes spindling, the shoots wither, the berries shrivel, and, finally, the whole plant dies. Oftentimes the insects will be found to have abandoned the exhausted roots of the dead vine for the more juicy ones of surrounding vines, which have not yet shown decided symptoms of attack. When one locality is exhausted, the insect removes to another, partly by the cracks in the ground,* and partly by running over the surface, and also in the winged form. According to observations made at Klosterneuburg, it seems possible that this change may be brought about by want of sufficient food. When winged, the wind is an efficient agent for their distribution. Of course, the wingless form may be transported in cuttings, stakes, straw, &c., and even in the clothes of vine-dressers. Most energetic measures have been taken to prevent the spread of the insect from Klosterneuburg and vicinity. All the vines have been dug up and, with the roots, carefully burned, and the ground fully impregnated with carbon disulphide by means of holes bored three feet deep and six feet apart, in which fifty-five to one hundred grams of the disinfectant was placed. It was found, on examination, that roots lying six feet deep in loamy soil were infested with the insect. The penetrating character of the carbon disulphide is shown by the fact that vines six feet from the holes in which it was applied died immediately. April is the best time for operations, as the insect is then soft and tender; but from August to October the winged form must be guarded against. Experience shows that, once cleared of the pest, ground may be again planted with vines, which grow luxuriantly without danger until it is re-introduced from a foreign source.

Since the destruction of the vines entails great loss, efforts have been made to discover some other method of getting rid of the insect.

Of all the substances hitherto employed which do not injure the vines, phosphuretted hydrogen and ammonia, liberated in the soil, have been most successful. To use the first, a hole is bored in the ground and filled with lime, on which water impregnated with phosphorus is thrown, and immediately covered with earth, all openings near being also closed in the same way as soon as steam is seen to issue from them. Among other experiments, the effect of dynamite in loosening a refractory sub-

* The absence of such cracks in sandy ground is probably the reason why the insect is not found therein.

soil was tried, and proved, unexpectedly, successful. Dynamite cartridges exploded in holes four to six feet deep loosened the soil so that it would absorb twenty large pails of water where previously half of one would stand a long time. Numerous substances have acquired some reputation in France, of which sulpho-carbonate of potassium dissolved in water is, according to Dumas, the most successful. Of the dry salt, forty to fifty grams are required for a large vine, the solution to be poured around the stalk.

Of all the weapons yet used, water is the only one completely to be relied on. It is not likely the *Phylloxera* will become entirely extinct, but it is probable we shall find means to render it comparatively harmless, and by high cultivation give our vines sufficient vigor to withstand its attacks. In sandy soil, with heavy manuring, the *Phylloxera* is even now not to be dreaded.

With regard to fruit-trees, decisive experiments have been made at Klosterneuburg that prove they are not subject to its attacks.

Conformable to analogy with similar phenomena, we may hope that possibly the scourge may vanish some time as suddenly as it has arrived. As human intelligence has triumphed over the *Oidium*, the potato-disease, the silk-worm malady, &c., it is probable that science will one day conquer the *Phylloxera*.

PHYLLOXERA VASTATRIX IN FRANCE.—Dr. Henry Erni, United States consul at Basle, Switzerland, sends the following note to the Assistant Secretary of State, under date May 5, 1875:

SIR: Upon the high authority of Professor Dumas, of the French Academy, it must be conceded that an effective remedy has been discovered against the grape-root louse, (*Phylloxera*.) It is the salt: potassic sulpho-carbonate, ($K_2S_2O_7$) which in a dry form is strown upon the soil, whence a rain-fall carries it down in solution, bringing it thus in contact with diseased grape-roots. Experiments by Messrs. Milne-Edwards, Duchartre, Blanchard, Pasteur, Thenard, and Boulay have been crowned with complete success.

INSECT INJURIES.—Our statistical correspondence shows a backward campaign on the part of the farmers' insect-enemies generally. The Colorado beetle, though making more formidable demonstrations in the East, has excited comparatively little remark in the West. The chinch-bug has probably been restrained by the cold backward season. The migratory grasshopper of the West is doing much damage in Kansas and Missouri, but has not yet shown a tendency to serious injuries in the States farther north. The cut-worms have attacked cotton and tobacco. The following is an epitome of the injuries done in different parts of the country by various species of insects:

Colorado potato-beetle, (*Doryphora decem-lineata*).—This insect is extending its ravages through the Middle States and the more northern of the Atlantic coast States, while in the Mississippi basin the complaints are less numerous and the injuries less formidable. In New York, Delaware reports the appearance of the beetles; in Chataqua they were swarming; in Allegany they appeared before the potatoes were planted. They were numerous in Gloucester, Camden, and Burlington, New Jersey; in Northumberland, Chester, Franklin, and Lancaster, Pennsylvania; in Caroline, Washington, Wicomico, Harford, Frederick, and Cecil, Maryland; Calpeper and King George, Virginia. The use of Paris green and other poisons was effective in some localities, but others were disposed to rely upon the more laborious method of hand-picking. Our correspondent in Frederick, Maryland, adopted a very ingenious and successful expedient. He reported that a little corn was thinly sown among his potatoes and the chickens turned into the patch.

While scratching up the corn they waked up the beetles and devoured them greedily. He states that his fowls showed no injurious influence from their new diet.

In West Virginia, Jefferson and Harrison report the presence of this pest. They were also more or less destructive in Shelby, Harrison, and Spencer, Kentucky. In Harrison their eggs were destroyed in great numbers by a long, reddish worm. The beetles were numerous and active in Fairfield and Perry, Ohio. In Orange, Indiana, they are resisted by shaking into pans; they are also reported in Clay. They had just appeared in Carroll, Illinois, and were plentiful in Marion, but less numerous than usual in Montgomery, Jasper, Tazewell, and Hancock. They are reported in Crawford, Lafayette and Milwaukee, Wisconsin. In Tama, Iowa, they were as numerous as ever.

Potato-bugs (*Cantharis*, *Epicauta* sp.) were very numerous and destructive in Orange, Indiana. They seemed to defy Paris green and other poisons. Our correspondent will find the remedy he asks for indicated on page 64 of the Annual Report of this Department for 1867.

Caterpillars (*Clisiocampa*) injured forest and fruit trees in Oxford and York, Maine. They appeared in countless numbers in Carroll, New Hampshire. They were also noted among late apples in Saint Francis, Arkansas, and Wood, Texas.

Grasshoppers or locusts.—The species designated as *Caloptenus femurrubrum* is reported at isolated points east of the Mississippi, but not as being very injurious. They were noted in Carroll, New Hampshire; in Conecuh and Madison, Alabama; in Knox, Tennessee; in Grant, West Virginia; in Livingston, Kentucky, and in Cass and Dodge, Wisconsin.

The far more destructive species, *C. spretus*, has recommenced its depredations west of the line of the Missouri, and in some counties to the east of that river. It was reported that they were hatching in immense numbers in Blue Earth, Wright, Sibley, Renville, and Todd, Minnesota. In some cases they were burned in great numbers in piles of straw. In Missouri they were very destructive in the northwestern part of Vernon County; in Platte they swept all the grain and grass crops; they were also a terrible scourge in Lafayette, Bates, Henry, Clay, and the northwestern part of Daviess. In Kansas they had eaten all the stacked tame-grass hay and all the old meadows, 25 per cent. of the wheat, and most of the growing corn-plants; in Marshall they destroyed wheat, oats, and gardens; Leavenworth records the most terrible visitation yet known; the popular dismay is indescribable. Similar reports come from Miami, Anderson, Franklin, Jefferson, Lincoln, Jackson, Republic, Allen, Doniphan, Nemaha, Brown, Cherokee, Crawford, Atchison, Labette, Neosho, and Johnson. In some villages the streets are covered with these insects. Fruit-trees have in many cases failed to bear from the fact that they were last year deprived of all their foliage and young-wood growth by these pests. From some counties come bitter complaints of the falsehoods of newspaper writers and others, palliating or denying the real extent of the disasters. These false representations are made in the interest of speculative property-holders who fear a depreciation of their investments. In a few counties, such as Howard, Lyon, and Montgomery, the injuries have as yet been small, but all such places are yet liable to destructive visitation. The cotton-plant was especially relished by these insects. In Nebraska they had destroyed 20 per cent. of the small grain and were still at work. In Merrick and Otoe they were preparing for extensive destruction. In Colorado they were numerous and destructive in Park, El Paso, and Douglas.

Chinch-bugs (*Micropus (Rhyparochromus) leucopterus*).—These insects have as yet made but feeble demonstrations in the Eastern States. A few were noted in Dinwiddie, Virginia. They are reported in De Soto, Mississippi, Ashley and Benton, Arkansas, Livingston, Kentucky, and Warren, Indiana. They were threatening the wheat in Schuyler and Pope, Illinois, and were more or less destructive in Jersey, Marion, Grundy, Hancock, Ford, Perry, Jasper, Crawford, Edwards, and Cumberland. Plentiful rains stayed their development and devastation in many places; in others it was noted that they were less numerous than formerly, but the cool, wet weather may account for that. In Wisconsin they were destructive, especially to small grain in Fond du Lac, Sauk, Dodge, Iowa, Jefferson, Milwaukee, Lafayette, and Crawford. In some cases the roots of winter-wheat were found covered with chinch-eggs. In Missouri they had begun a formidable demonstration in Vernon, Caldwell, Polk, Iron, Lafayette, Daviess, Montgomery, Calaway, Crawford, Hickory, and Henry. Kansas reports them in Butler, Lyon, and Labette, more destructive in some localities than the grasshoppers.

Army-worms (*Leucania unipuncta*) are reported in Knox, Tennessee, and in Logan, Kentucky, where they were specially destructive on wheat and grass. In Pike, Perry, and Jersey, Illinois, and in Perry and Boone, Missouri, they were more or less troublesome.

Cut-worms (*Agrotis* sp.) were plentiful and injurious in Gloucester, New Jersey. They are also noted in Jackson, Florida; in Richland, Louisiana; in Bandera and Bosque, Texas; in Boone, Sharp, Scott, Izard, Montgomery, Saint Francis, and Van Buren, Arkansas. In many cases they materially damaged the growing cotton. They were also numerous in Grainger and Grundy, Tennessee; in Marion and Grant, West Virginia; in Monroe, Ohio; in Clay, Indiana; in Iroquois and Pike, Illinois; in Boone and Taney, Missouri. In the last named they have taken to chewing tobacco, and promise to furnish an unwelcome and abundant home-consumption for that crop.

Miscellaneous.—A species of grub-worm (*Lachnosterna* sp.) is doubtfully mentioned by our correspondent in Gloucester, New Jersey. Joint-worms (*Isosoma (Eurytoma) hordei*) are reported in Orange, Virginia. The Hessian fly (*Cecidomyia destructor*) is noted in Grainger, Tennessee, and in Greene, Dallas, and Lawrence, Missouri; in the last named county the Fultz wheat has been found "fly-proof." The fly was especially noticeable in early-sown wheat. In Harrison, Kentucky, a long, reddish-brown "worm" (?) was observed destroying the eggs of the Colorado beetle. Our correspondents would especially oblige us by sending specimens of such new insects for examination. Wire-worms (*Elatér* sp.) were troublesome in Clay, Indiana, in Pike, Illinois, and in Henry, Iowa. Coddling-moths (*Carpocapsa pomonella*) threatened the apple-crop in Weber, Utah. In Piatt, Illinois, a small dark-colored worm destroyed the foliage of the elm and forest trees. A small black bug was very injurious to several crops in Pike, Illinois. Rose-bugs (*Macrodactylus subspinosus*) injured grapes and small fruits in Labette, Kansas. Cotton-lice (*Aphis* sp.) were troublesome in Leon and Suwannee, Florida, in Holmes, Mississippi, and in Madison, Louisiana. In Stevens, Washington, crickets (?) destroyed much grain.



A detailed botanical illustration of a series of potted plants, likely tobacco, showing the progression of growth from a small seedling to a tall, mature plant. The plants are arranged in a row, each in a pot labeled with a number from 0.0 to 1.0. The plants are supported by stakes and show increasing height and leaf density as the number increases. The illustration is in a classic scientific style, with fine lines and shading to represent the texture of the leaves and the structure of the stems. The pots are cylindrical and have a textured surface. The background is plain, emphasizing the plants themselves.

CHEMICAL MEMORANDA.

BY WM. MCMURTRIE, CHEMIST.

In a previous monthly report I took occasion to publish the results of some preliminary experiments, made principally to determine whether arsenic, when applied to plants in the form of Paris-green for the destruction of the Colorado potato-beetle, could, when transmitted to the soil, be absorbed and assimilated during growth, and at the same time I gave the results of other experiments in the same direction. My own experiments having been of a somewhat unsatisfactory character, and those of others having furnished such extremely discordant results, I finally determined to follow out the investigation about to be described, to endeavor to settle this question, together with others which subsequently arose. These subsequent questions were suggested by the fears entertained by some of our correspondents that, when Paris-green was applied to crops year after year, sufficient quantity might accumulate in the soil to poison it sufficiently to destroy its fertility and render it incapable of producing vegetation.

My investigation was therefore made to determine—

1st. If applied to the soil, can arsenic or arsenious acid be absorbed and assimilated in the economy of plant growth?

2d. If absorbed and assimilated, can it be taken up in sufficient quantity to become prejudicial or injurious to the health of consumers?

3d. If not taken up by the plant during growth, does it by its presence in the soil exert a poisonous influence upon the plant itself?

4th. If it exerts a poisonous influence upon the plant, to what extent may it exist in the soil before it becomes injurious?

The experiments were conducted as follows:

Fifteen common flower-pots, of as nearly uniform size as possible, were selected, and each one filled with a measured quantity of good garden-soil. With the soil of each pot were then thoroughly intermixed quantities of Paris-green, ranging from 100 milligrams to 1 gram. Thus one pot contained 100 milligrams; that next to it contained 200 milligrams; the next 300; and this quantity was increased until it finally reached 1 gram. In the other pots the increase was made more rapid, and the other pots contained 2, 3, 4, and 5 grams, respectively. After the soil had thus been carefully prepared, a given number of peas, all of which were carefully selected, so as to secure as nearly as possible those of the same size and appearance, were planted in each pot. This experiment proved unsatisfactory, from the fact that on one night that portion of the green-house in which the pots had been placed became too cold, and a large number of the seeds failed to germinate on this account. I therefore considered it of some importance to duplicate the experiments, and, without disturbing these further than to remove them to a warmer portion of the green-house, prepared in a similar manner and with the same care another series of pots. At this time the question also arose, what would be the effect of arsenic in combination, as arsenite of potassa and arseniate of potassa? For the purpose of determining this, I prepared two other series of pots in the same manner as before, and placed them alongside the former. With these experiments my results were extremely satisfactory, and when those plants which had grown well had reached the period of bloom, the three series of pots finally prepared were each placed by themselves in a convenient position and photographed, and from the

photographs thus obtained the accompanying illustrations were made. In these experiments, for the sake of comparison, one pot of soil was prepared without addition of any poisonous compound. Now, it is quite evident from these plates that the arsenical compounds in the soil did produce an injurious effect, and in some instances, in fact in the majority of them, it was decidedly marked. In case of the Paris-green, as shown in Plate 1, it is not noticed until the quantity present in the soil reaches 500 milligrams, and that in the other pots the size of the plants decreases regularly as the quantity of arsenical compound present increases. The numbers on the pots in the different plates represent the quantities present in grams and tenths of grams.

In case of the arsenite of potassa, (Plate 2,) the effect seems to be more immediate. This may be due either to the greater solubility of the compound or to a possibly larger quantity of arsenious acid. The potash compound seemed nearly pure, being crystallized, and the purity of the copper compound was not estimated. Yet in this case the effect does not seem decidedly marked until the quantity present reached 300 milligrams.

To the influence of arseniate of potassa the plants seemed to be more sensitive still, for those in the pot containing but 100 milligrams seem to be affected. Yet even when 200 milligrams are present, the plants seem to thrive tolerably well.

What, then, are the quantities of these compounds which may be applied to the soil for the various purposes in practical agriculture before effecting any injurious results? The amount of soil in each of the pots employed in these experiments was 91.5 cubic inches. In case of the Paris-green, the limit is 500 milligrams for this quantity of soil, which is equivalent to 145.6 grams per cubic foot, or 906.4 pounds per acre, calculating for a depth of one foot. The limit for arsenite of potassa, being 300 milligrams per 91.5 cubic inches, is about 540 pounds per acre. Though the plants seem to be affected by even a small quantity of arseniate of potash in the soil, I am nevertheless inclined to the opinion that this compound may be applied at the rate of 150 pounds per acre without any great injury to the crop. For practical purposes, however, it is never necessary to apply in any case so large an amount.

These results are confirmed by the water-culture experiments of Professor Freytag* in his investigations upon the influence of the sulphurous and metallic fumes of the Freiberg Metallurgical Works upon the vegetation of the surrounding fields. He found that plants were killed when placed in solutions containing $\frac{1}{80}$ per cent. arsenious acid, $\frac{1}{50}$ per cent. sulphate of zinc, $\frac{1}{40}$ per cent. sulphate of copper, $\frac{1}{25}$ per cent. sulphate of cobalt, $\frac{1}{15}$ per cent. sulphate of nickel, and $\frac{1}{5}$ per cent. sulphate of iron.

Mons. E. Heckel† states that 25 milligrams of arsenious acid or the soluble arseniates in 90 grams of water prevents germination and destroys the embryos of seeds.

I cannot, however, agree with Professor Freytag in the statement that the arsenious acid and the oxides of zinc and lead cannot be injurious to vegetation on account of their property of forming insoluble compounds in the soil, since in some of my preliminary experiments presence of such insoluble compounds as the arseniates of barium, strontium, and magnesium was sufficient to prevent germination. Again, in reports upon the composition of certain mineral-waters of Germany, we

* Jahrbuch für Berg- und Hüttenwesen, 1873.

† Comptes rendus, t. LXXX, 1172.

PLATE II.

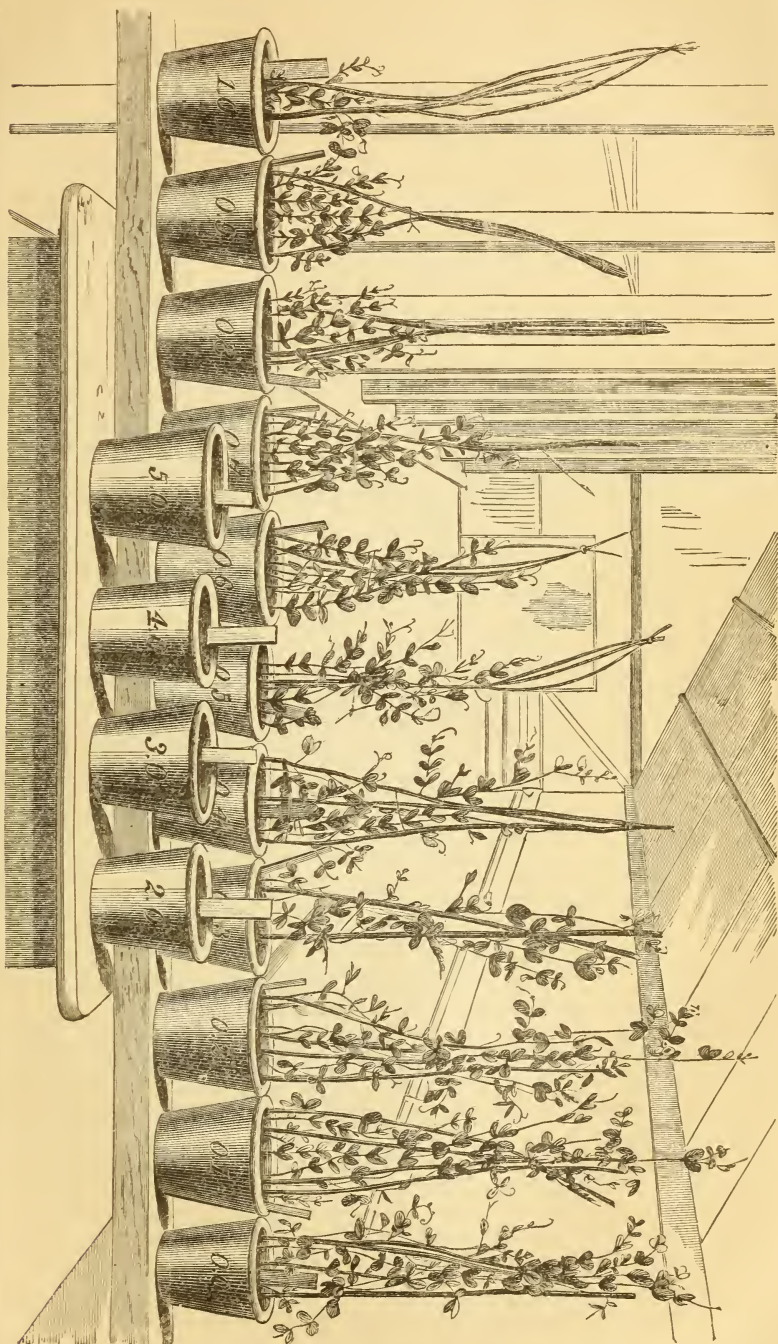
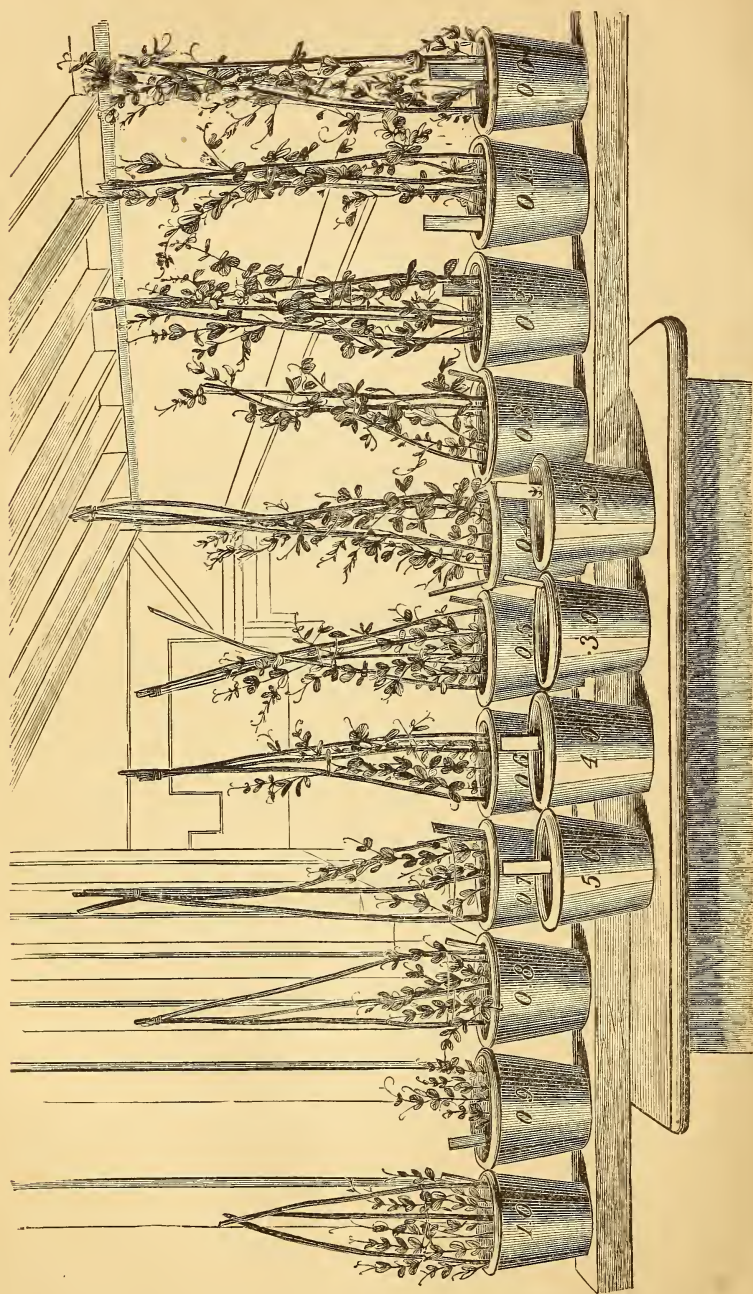


PLATE III.



notice statements of the presence of such insoluble compounds as arsenite of iron in solution. These facts argue against the possibility of accumulation of sufficient arsenic in the soil by regular applications of Paris-green in the quantities recommended for the destruction of the Colorado potato-beetle. When rotation of crops is observed and application of the poison cannot therefore take place upon the same plot more than once in three or four years, it is probable that each application, being acted upon by the natural solvents in the soil, will be removed by drainage before another is made. And yet, even when annual applications are made, so much time must elapse before the limit could be attained that no injury need be feared from this cause.

Now, can arsenic be absorbed and assimilated by the plant in the economy of growth? My investigations give a negative reply. All of the plants grown, from the largest to the smallest, were examined by careful application of Marsh's test; yet I failed in any case to detect the presence of arsenic.

Before making the test the organic matter of the plant was destroyed by boiling it in hydrochloric acid with addition of potassic chlorate, and the solution filtered.

I also carefully examined potatoes which had been subjected to applications of Paris green, and which were furnished by Mr. George W. Campbell, Delaware, Ohio, Mr. D. C. Richmond, Sandusky, Ohio, and Mr. J. S. Nixon, of Chambersburgh, Pa., and failed in any case to detect the presence of arsenic.

With these facts before us, and without considering what might be the result of a series of experiments continued through a number of years, we must conclude that plants have not the power to absorb and assimilate from the soil compounds of arsenic, and that though arsenical compounds exert an injurious influence upon vegetation, yet this is without effect until the quantity present reaches: for Paris green about 900 pounds per acre; for arsenite of potassa, about 400 pounds per acre; for arseniate of potassa, about 150 pounds per acre.

HASTENING GERMINATION.—M. Heckel has made some experiments in the germination of seeds, in order to notice the effect of different chemical compounds. He placed the seeds between sheets of blotting-pad, and treated them with the several compounds, as follows:

1. He sprinkled one-half grain of finely-pulverized camphor between the sheets.
2. Bromide of camphor one-half grain, in the same condition and a similar manner.
3. One-half grain bromine water, and an equal quantity of pulverized camphor.
4. Bromine water alone.
5. Bromide of potassium, finely pulverized.
6. Chlorine water.
7. Solution of iodine.

Under normal conditions, seven to eight days were required for germination. With the application of the different substances named, the time of germination was as follows: Bromide of camphor, 36 hours; camphor, 4 to 5 days; camphor and bromine water, first time, 30 hours; second time, 26 hours; third time, 36 hours; bromide of potassium, no effect; iodine, 5 days; bromine, 3 days; chlorine, 2 days.

Since the effect of bromide of camphor is so much more marked than that of either of its constituents acting singly, it is evident that in its action it suffers no decomposition. It should further be remembered

that it acts without being dissolved, and the author therefore considers that the influence is due to the volatilization of the compounds. He further experimented upon the influence of the alkaline borates and silicates in small quantities, and found that such slight application as 250 milligrams in 20 grams water retarded germination from one to three days, and that when the application was made somewhat stronger, 600 milligrams in 20 grams water, the phenomenon was suspended. He also found that arsenious acid and the soluble arseniates arrest germination, and destroy germination when applied in so small a quantity as 250 milligrams in 90 grams water.

FACTS FROM VARIOUS SOURCES.

STATISTICS OF CORN-GROWING.—The low rate of yield for all kinds of grain in the South, and the small amount of hay gathered in that region, have led to an impression, general as it is false, that the farms of the Southern Atlantic coast are not susceptible of high culture and large production of general farm-crops. The following communication has been received from a gentleman thoroughly acquainted with this section:

Indian corn is the great American cereal, and it should be the pride, as it is the interest, of the farmers of the nation to make the most of it by making all reasonable efforts to produce the very largest yield and finest quality of which the soil and climate are capable: it is for the honor as well as the profit of every producer to aim at obtaining the highest yield per acre that can be made, and not allow the general average to fall below the achievements of careful cultivators.

Yet a reference to the carefully-collected statistics of the Agricultural Department, for different years between 1865 and 1873, will show that the average yield is very low, being only about one-fourth that obtained by the best cultivators. This lesson forcibly illustrates the utility and value of the annual statistics collected and published by the Department.

The annual report on Indian corn for 1865 shows the average yield per acre to be, in Maryland, 23 bushels, value 68 cents per bushel; Virginia, 22 bushels, value 59 cents per bushel; Pennsylvania, 32 bushels, value 60 cents per bushel; Ohio, 37 bushels, value 42 cents per bushel; United States, 24 bushels, value 48 cents per bushel.

The entire crop of the United States was reported to be about 932½ millions of bushels, worth about \$466,000,000. The entire crop of Maryland was reported to be 10½ millions of bushels; and of Virginia, 19¼ millions of bushels, for that year.

And these reports show that the yield in those two States is below that of their nearest neighboring States, north and west, and even below that of the cold, rigorous States of Maine, New Hampshire, and Vermont, their average being 31 bushels the acre, while the highest average yield in any State east of the Pacific slope was in Kansas, being 39 bushels; the next New Jersey, 36 bushels.

Now, in connection with this showing, if we look at the large achievements of careful, thorough cultivators, it may thoughtfully be asked, is this meager average in Maryland and Virginia, and some other States, creditable or profitable to the operators? It is believed there are no natural conditions in these localities to hinder them from doing as well as the best.

The above report also shows that, notwithstanding the low yield, the aggregate value of the corn-crop in Maryland in 1873 was \$7,106,680; and in Virginia, \$11,372,250. And, in view of all the facts, it is safe and reasonable to say that this amount may easily be doubled, and without more than half that amount of increased cost for cultivation. I have known over 100 bushels of good corn to be raised from an acre two years in succession at one-fourth less cost per bushel for the grain than the cost where only 50 bushels per acre was obtained, or even 60.

There are numerous well-attested instances in which yields of from 70 to 170 bushels of good shelled corn have been obtained from one acre of land.

The Carroll County (Maryland) Agricultural Society, in 1873, gave the premium of \$100 to Mr. J. Brown, of Baltimore County, for producing on one acre of ground 120½ bushels of good, sound corn, and 9,880 pounds of good fodder. It was a timothy meadow, and was mowed two years, then plowed deep, subsoiled, and sown to wheat one year; then spread over lightly with stable-manure, which was plowed under; then 500 pounds of bone-dust spread broadcast, well harrowed and rolled; then marked off with furrows 3½ feet apart.

then a compost of ashes, hog-manure, salt, and gypsum spread along in the furrows; then the corn was dropped in the furrow, kernels about six inches apart, and covered two inches deep; it was planted 10th of May, but from too much wet and rain it did not come up well; again he ran furrows in the same way between the first ones, putting one sack of guano in the furrows to hasten germination and growth, and planted in same manner as first time, which came up well about the 1st of June; harrowed several times, until the corn was too high; then plowed twice with shovel-plow; the deep plowing and subsoiling prevented evil effects of the drought. After careful measuring and weighing of the ground and corn by the proper persons the product was found to be as above.

In March, 1873, I was at Amherst Court-House, Va., and, in company with Hon. Mr. Whitehead, member of Congress for that district, and Mr. Mead, the postmaster of the place, visited one of the store-houses, where we were shown specimens in the ear of a large white dent corn which that season yielded 170 bushels of shelled corn on one acre of ground grown by Mr. Hudson, on the farm of W. P. Miles, known as the "Oakridge estate;" and the facts were attested by Mr. Fortune, a notary public of the county.

In looking over a bound volume of the old Farmers' Register, printed thirty-five years ago, by Edward Ruffin, at Petersburg, Va., I find the following statement properly vouched for: "Mr. Meggison, of Albemarle County, Virginia, was reported by the county society to have raised 110 bushels of sound shelled corn on one measured acre of ground, being 'river-bottom' and thoroughly cultivated; a large, white sort of corn." The same paper says, "a yield of 60 to 80 bushels the acre was quite common;" it states also that 35 to 40 bushels of wheat to the acre was often obtained in those days.

In the annual report of the Department of Agriculture for 1868 there is an authenticated statement that at Worcester, Mass., Joseph Goodrich and Luther Page each raised 111 bushels of shelled corn on an acre of land; certainly not a bad achievement for a region where they have snow one-third or more of the year. The same report gives instances in Ohio where 99 and 101 bushels to the acre were obtained.

The Rockbridge County (Va.) Society, at its meeting in 1871, gives the following official statement of the results of competitors for the premium on the largest yield of corn:

"Farm of J. D. H. Ross, clay loam, upland; an old timothy and white clover sod, plowed in December with three horses, harrowed four times with three horses; hills marked 3 feet by 3½ feet apart, and manured with home-made compost, a handful to three or four hills; plowed three times in the course of the season. One acre yielded 76½ bushels of shelled corn, 56 pounds to the bushel; and five acres gave 253½ bushels. Farm of A. L. Nelson, loam, with clay subsoil; in grass for four years; plowed in February to a depth of 12 or 14 inches, and harrowed well just before planting, April 26 and 27. The hills received plaster and ashes at the rate of two-thirds of a bushel of plaster and one and one-third bushels of ashes per acre. One acre yielded, by measure, 91½ bushels; by weight, 86 bushels, 37 pounds each; five acres yielded 317 bushels by weight. Farm of G. W. Pettigrew, on a sandy loam, having a northeastern exposure, and overlaid by one to three inches of soil deposited by the flood of 1870; plowed in April to the depth of 10 inches, planted April 12. One acre yielded 89½ bushels by measure, or 97 bushels 47 pounds by weight, and five acres gave 400 bushels and 40 pounds by weight."

A meeting of the South Carolina Agricultural and Mechanical Society in 1869 reports the experiments of John W. Parker, which resulted in producing from 147 to 200½ bushels of corn per acre, and gives the mode of doing it as follows:

"Selection was made of a quagmire, grown over with rushes, willows, and sour grass, abounding with snakes and malaria, and traversed by a winding, sluggish stream. Thorough drainage was attained by the construction of a canal and underdrains, and during the summer the land was cleared, leveled, and broken up with a two-horse plow. In November a heavy coat of cow-house manure was applied and plowed under, and the process was repeated in January and again in March, with subsoiling. In April, the weeds having obtained a luxuriant growth, were limed and turned under. In May another coat of manure was plowed under, and the ground was harrowed perfectly level and laid off in rows 3 feet apart. In the furrows were applied Peruvian guano, salt, and plaster at the rate of 200 pounds to the acre. The corn-seed having been soaked in a solution of niter and rolled in plaster, was dropped, 10 inches apart, in the rows, and covered with rakes, after which the land was rolled. The corn was up in five days from planting, and as soon as it was sufficiently large a long, narrow plow was run around it, followed by the hoe, the crop being kept clean by shallow, level culture until it began to shoot and tassel. The field was then irrigated by conveying from a reservoir a gentle flow of water through every alternate row. The yield on two acres was 147 bushels per acre. The following year the experiment was repeated in like manner, except that the rows were laid off 2½ feet apart, one acre yielding 200½ bushels, as attested by a viewing committee. He attributes much to irrigation in these instances of extraordinary products, and concludes from these and former experiments that success in corn-growing depends greatly on thorough preparation of the soil during the fall and winter by deep plowing, with underdraining of moist lands; this preparation to be followed by judicious manuring. While the early working of the field should be deep, the

later culture should be shallow, and the roots of the corn should not be disturbed after it begins to tassel."

If we can stimulate farmers generally to put forth the requisite effort to largely increase the average yield of corn, a benefit will be secured to themselves and the nation at large, and where many do obtain such creditably large crops, many more can do the same by reasonable care and work. And it may be safely said that, next to deep plowing and sub-soiling, no one thing enters more efficiently and largely into the elements of success in corn-growing than the liberal application of alkalies, such as wood-ashes, lime, salt, and the like, in connection with plentiful supplies of stable and hog manures.

Care in the selection of seed is of prime importance, and this should be done, before the crop is harvested, by going through the field and selecting the largest, earliest ears from such stalks as have two or more ears on them, for such prolific seed is quite sure to repeat itself in producing its like. In obtaining over 100 bushels per acre myself, I pursued this course, and no stalk had less than two ears.

D. S. CURTISS.

CALIFORNIA PROSPECTS.—Col. W. W. Hollister, of California, one of the foremost farmers of his country and time, writes as follows, under date of Santa Barbara, May 24, 1875:

As to California, generally, there will be no great trouble from drought. The rains were copious enough, but did not come opportunely. Unusual cold weather prevailed over the State, excepting here at Santa Barbara, where there was not enough frost to kill my potatoes. The crops will not be a failure by any means, though in places short and in places none at all. The greatest hardship will be in grazing. Men will have to resort to expedients to get stock through. Some will go to the mountains, some will get grazing from the grain-fields and straw from the thrashing-machine; all will be utilized, and I guess there will not be serious loss. Some herds of sheep have already gone to Arizona, and more will follow. I wish there was only a chance for our boys to go to New Mexico and be sure of protection. * * * Lompoc [one of the new settlements] is getting on well; there will be some fine crops, mostly of late kinds—beans, potatoes, and corn. The grass, as everybody knew it would be, is fine. While other flock-masters will find some hardships, our fine old Lompoc and San Julian ranchos are glorious in abundant pasture. We will carry all of our stock [about 50,000 head of sheep] as easy as usual.

My crops here are better than I have ever had since I came to the place. I think I will get four or five thousand cents of barley and a good fair crop of wheat, all of which is volunteer. My corn and potatoes look fine. I have cured and housed three hundred tons of hay, and the almonds are bearing as much as I want to see on trees at their age. [Almonds number 25,000 trees.] My little lemon-trees are some of them full of fruit. That is quick work—two and three years from the bud—better than I expected. When you come to see me I will make you lemonade from the trees, and talk you to sleep under the shadow of their foliage.

There ought to be a grand effort to help Scott with the Atlantic and Pacific Railroad in the next Congress. * * * We are suffering more from high-priced labor than from drought or any other cause. The cost of production must be lessened, so that living will be less expensive. The reduction of price for labor must first be made on the farm; that is the beginning place; then all other labor can come down in proportion. * * No farm can survive \$25 per month here, or \$15 in the East. If the farm goes, here or there, all goes. Many immigrants come here and, instead of going to work at what business justifies, demand \$30 and \$40 per month. If they don't get that, they scold the country and go back—if they can. We have got to go back to old prices and all men go to work. Work! work! work! there is no other way to live.

In a previous letter Colonel Hollister thus sums up his ideas on the labor question:

Labor, intelligently applied, is sure to add to the wealth of the State. The great thing to be feared is idleness. If people do not work they must be poor. If they consent to be poor they become demoralized. Poverty and crime go together. If you want a country moral make it prosperous. Stimulate enterprise by just laws, and there is no such thing as failure. * * It is not railroads that are doing the harm; it is general idleness—*laziness*—a desire to live by our wits and not by work. Labor is the problem for our solution now. God send that we solve it soon and all go to work with a will!

THE ECONOMY OF FEEDING MEAL TO DAIRY-COWS.—Mr. Linus W. Miller, of Stockton, N. Y., has for some years past been experimenting with corn-meal as feed for his dairy-cows, and his success has been so satisfactory that he gave the result of his experiments in an address delivered before the American Dairymen's Association on the 14th day of

March last. In the opening portion of his address, Mr. M. states that sixteen years ago he happened to mention to an acquaintance that he was short of hay for wintering his stock, and was advised to use scalded corn-meal as a substitute, at the rate of three pints per day, keeping in stall during winter and watering by hand. Profiting by this hint, he dried off his herd of twenty cows, and placed them upon an exclusive meal-diet, feeding an average of three pints, dry, morning and evening; giving the large cows a little more, and the small ones a little less. He kept them in warm, clean, and properly-ventilated stables, only turning them out for a half hour each day for water. The first three or four days they exhibited symptoms of uneasiness on this new diet, but soon regained their usual quiet and content. As this experiment was commenced as a necessity, and with no probability of its being continued through several years, Mr. M. did not weigh his cows either at the commencement or end of meal-feeding. In the spring, when the cows began to drop their calves, he fed them all the hay they would eat in the morning, with two quarts of meal at night, but in every instance they showed a decided preference for meal. When upon exclusive meal-diet that season—a period of nine weeks—rumination ceased when they had no longer any food to remasticate. During this time the cows drank a remarkably small quantity of water, varying from one to eight or ten quarts per day. Although accustomed to eating a daily ration of salt during the summer, the herd showed but little inclination to eat it upon meal; but when fed upon hay they at once resumed the consumption of the usual amount of salt and water. Mr. M. says that he made more than the usual quantity of butter that season, and when turned out to grass the cows did better than they had ever done before. After this brief experience, whenever short of hay, Mr. M. resorted to meal, feeding, in as many winters, five, seven, and eight weeks, and always with the most satisfactory results. The cows thus fed invariably did better, when turned out to grass, than those fed on hay, the quality of the milk being better, and the tendency to lay on flesh being greater.

Mr. Miller has not only experimented with meal, but has also experimented with meal made from different varieties of corn. Meal made from white western Indian corn is not so nutritious as that of the yellow native corn of Western New York. It contains only a fraction of 1 per cent. of oil, while yellow corn contains nearly 4 per cent. He states that there was a marked difference in its effects upon his cattle. Feeding of meal from the white corn soon caused the hair to look and feel stiff and harsh; then the skin became dry, with the appearance of scurvy; finally, some of the herd broke out with blotches along the back and sides. While a mixture of oil-cake will prevent this difficulty, Mr. M. prefers to use yellow meal, and avoid the necessity and expense of using oil-cake with meal made from white corn.

As to the result of his experiments during the winter of 1873-'74, Mr. Miller says:

At the close of the season, having fed no bran or extra feed since the 20th of August, I find, by factory returns, that my cows averaged a fraction less than 20 pounds per diem for the season of five months—May 19 to October 19—being 1 pound and 3 ounces each per diem more than the average of 531 cows whose milk was sent to the same factory, and an average of $4\frac{1}{4}$ pounds each per diem more than my cows gave for the corresponding season the previous year, when wintered on hay. I had also two cases of abortion in my herd, the result of accidents—having had but one the previous year. The conditions were more than ordinarily unfavorable; but the results were, to say the least, a demonstration of the adaptation of an exclusive meal diet to meet the wants of my animals under the conditions enumerated. Another result of meal-feeding I find to be a tendency to lay on flesh more readily than when wintered in the usual manner. I am also satisfied that my herd hold their age better, and that their teeth last longer; the reasons for which are apparent. What the effect

would be if wintered continuously for consecutive years on condensed food I am not able to say, never having tested it. But looking to my own profit, as a dairyman, I propose hereafter to feed my cows when dry upon an exclusive meal diet, and also to feed more freely on this article during the spring months. My practice has been to make the change from hay to meal and *vice versa* suddenly, without gradation, and thus far it has been with safety; yet prudence might dictate a gradual change when returning to hay; and also care in supplying the animal with the necessary quantity of water for moistening the coarse food. If cows could be watered in their stalls, whether fed on meal or hay, in cold weather, and their stalls kept warm and clean, taking care to curry daily, there would be a great saving of food. I would not wish to be understood as laying down the rule that a daily ration of three quarts of meal is sufficient in all cases. Large cattle would require more and small ones less. He who feeds meal exclusively should watch his animals closely, and variations should be made according to circumstances. In very cold weather the animal requires more food, no matter what its nature may be, than in warm, pleasant days. The practice of turning out animals in the cold and storms to become chilly, is neither humane nor economical. Regularity in the hour of feeding is also of great importance, whatever the food. It is a law of animal life that the appetite conforms to habit, and that the digestion of food will be more perfect if taken at stated intervals. Where food of any kind is kept constantly within reach of an animal, it is tempted to eat more than nature requires, and much more than can be properly digested. In feeding meal, whether alone or diluted with coarser food, it is absolutely imperative that it should be ground as fine as for family use; and if from white corn, on an exclusive meal diet, a small quantity of oil-meal or cotton-seed meal should be mixed with it.

DEPARTMENT vs. SEEDSMEN.—Notwithstanding the falsehoods of unprincipled seedsmen as to Department seeds, we must insist that the closing remark of our correspondent does not properly apply to the majority of American seedsmen:

They have all come up most satisfactorily. Having planted them under similar circumstances and same soil as those received from seedsmen, and so far as I can judge are infinitely truer to name than those bought by me of ———, of ———; or of ———, or of ———; the latter, scarcely ten plants from a packet of cabbage (large flat Dutch) germinating, though all were planted at the same time, condition, and alongside of each other, both in hot-bed and on open ground, the soil being well enriched with fine old manure. I regret to say that so little dependence can be placed in our seedsmen generally.

GERMAN WINE PRODUCERS' ASSOCIATION.—The following is a letter from the president of the German Wine Producers' Association, soliciting this Department to send delegates to the convention of this association, to be held in the autumn of the present year at Colmar, Germany:

CARLSRUHE, April 1, 1875.

UNITED STATES DEPARTMENT OF AGRICULTURE,
Washington, D. C.:

We take pleasure in inviting the honorable Department of Agriculture to send delegates from the United States to the congress of German Wine Producers, to be held in the latter part of September or the beginning of October of this year, inasmuch as subjects of international rather than strictly local character will here be discussed.

The Oenological congresses at Munich, in 1872, (*Annals of Oenology*, vol. III, pp. 263 and 376,) at Vienna, in 1873, (*Annals Oen.* vol. V, p. 1.) and at Trier, in 1874, (*Annals Oen.*, vol. V, p. 135,) have proven that the joint labors of the representatives of different nations thus assembled were likewise of greatest importance in our department of science.

We hope the more confidently to see your country represented, since the second congress of the International Ampelographical Commission will be in session, either immediately before or after our convention, in connection with which we shall institute an exhibition of all things appertaining to the culture of wine.

Accompanying this you will please find a list of questions, which, with others that may be hereafter offered, will be submitted for discussion in our convention; the programme of the exhibition will soon be sent you. As we desire to present to visitors a complete exposition of the scientifically practical attainments in our department, we would gladly receive any suggestions, information, or contribution of implements used in wine-culture that you may deem proper to make.

DR. A. BLANKENHORN,
First President G. W. P. Association.

The object of these associations is certainly an important one, and it is to be regretted that this Department has not the means at its disposal to send representatives from this country. No doubt many interesting facts and much valuable information will be brought to light.

Among the questions to be answered and discussed, a few of the more important are as follows:

- What results are arrived at in the use of fertilizers in vineyards?
- What is the relation between the condition of the soil and the quality of the wines?
- What cause do the latest observations assign to the favorable results of "ringing" vines?
- When grape-cuttings have grown vigorously during the first year, ought they to be shortened in the following spring or not?
- What are the results of American seed-culture?
- Is it safe to conclude that the plant raised from a hardy grape-variety will also prove hardy?
- Can a hardier and more vigorous variety be obtained by grafting European cuttings upon American vines?
- Does smoking the vines prove effectual against injuries caused by frost?
- What are the latest observations regarding *phylloxera vastatrix*?
- Might they not be successfully opposed by their natural enemies?

A SUPPLY OF WATER.—Mr. D. S. Curtiss, who has had experience in utilizing the rain-water supply in Wisconsin, thus writes:

In your monthly report for January, 1875. I find the following:

"FAILURE OF WATER.—*Columbia, Wis.*: Water in the earth during the last five or six years has been constantly, steadily settling, so that most of our wells have had to be deepened in order to have water. What are we coming to? A barren waste? Or can we do something to moisten our climate?"

Now, with your permission I will show that the people of Columbia County, and all others in the same belt of country, may have a reliable supply of the very best water, and at very low cost.

The results of rain-gauges, kept at different points throughout the Middle and middle Western States, show that the average depth of rain-fall annually is 48 to 54 inches, over four feet, on the entire surface of that range of country; an immense quantity of water, which would be totally destructive did it not speedily and regularly pass off in deep streams, and by absorption and evaporation.

About $7\frac{1}{2}$ gallons of water make one cubic foot; and about $8\frac{1}{2}$ cubic feet are contained in one hogshead; one cubic foot contains something over four pailfuls of water.

A hole in the ground 8 feet square and the same depth will hold 62 hogsheads of water. A round cistern 4 feet in diameter and 6 feet deep will hold over 46 hogsheads of water; and one 12 feet deep will hold 93 hogsheads of water.

A more definite idea of the quantity of water that falls, annually, will be formed by considering that the quantity which falls on the roof of a building 30 by 40 feet in size, is about 400 hogsheads, and nearly 25,000 pailfuls.

Many places in the State of Wisconsin the wells cost from \$50 to \$150, the greater price in sections on the prairies where they have to dig through lime rock with drills. But good cisterns can be made for from \$20 to \$50; while less than one-fourth the labor and trouble will be required to raise the water when wanted, than is required by those deep-drilled wells.

The cistern at the barn, to water the stock, need not be very deep, but broader, to afford the needed supply of water for the animals.

But for purposes of the house and family the cistern should be deeper, in order to retain the water at a colder temperature to be palatable for drinking; 12 or 15 feet depth will keep the rain sufficiently cool. A good way, and perhaps the best, is to make the house cistern about 6 feet in diameter, and 12 to 15 feet deep; then put in a partition-wall across the middle, of soft, porous brick; and allow the water from the eaves to run into one-half, and with the pump draw out from the other half, a filtering crib or space being made in the partition-wall near the bottom through which the water can pass from the portion into which it first falls to the other.

Let this course be pursued and there will be no water famine, as there has been no year in the past two decades when there was not over three feet depth of rain and snow fall in all of the region above named.

THE INTERNATIONAL EXHIBITION AT COLOGNE.—In reference to the international horticultural exhibition to be held at Cologne, in Germany, in August next, the general programme of which was published in the Monthly Report of this Department for April, the Department has received a communication from Baron Von Oppenheim, chairman of the

general committee, which states that the Hamburg-American Steamship Company has definitely granted a reduction of 50 per cent. on the ordinary rates of freight for goods going to, as well as coming from, the exhibition. Such goods are to be addressed to Messrs. Ollendorf & Co., Hamburg, who have undertaken to forward them to Cologne by the Minden Railway Company, which will also make a reduction of 50 per cent. on the tariff of freight. The general committee express the hope that American machinists will be induced to participate in the exhibition on a large scale with their unrivaled productions.

CHANGES IN THE ENGLISH AGRICULTURAL POPULATION.—The number of persons in England and Wales engaged in agriculture, according to the census of 1871, was 1,634,192, against 1,833,295 in 1861, and 1,928,796 in 1851. The later decade shows a decrease of 10.86 per cent., while in the previous one the number declined but 5.46 per cent. During the last decade the towns and cities enlarged their jurisdiction, absorbing 299,476 acres previously in farms; yet the cultivated surface increased from 24,905,758 acres, in 1861, to 26,322,477, an increment of 1,417,719, or 5.67 per cent. The number of agricultural landed-proprietors fell from 30,766, in 1861, to 22,964 in 1871, showing a decrease of 7,802, of whom 6,862 were females. This fact is accounted for by statistical writers on the ground that landed property yields a much smaller rate of interest than the multitude of limited-liability, companies that have lately grown up in England. Hence, small landed proprietors, especially women, who have not the capital or skill to render the soil productive, have shown a disposition to part with their freeholds.

The class styling themselves farmers or graziers have remained stationary during twenty years—249,431 in 1851, 249,735 in 1861, and 249,907 in 1871—but the numbers of farmers' or graziers' wives shows a remarkable increase, being 164,618 in 1851, 163,765 in 1861, and 187,029 in 1871. That a larger number of this class of tenant-farmers find it prudent to engage in matrimony, argues a general improvement of condition. That the marriages of this class are neither imprudent nor premature, is argued from the fact that only 5,373 of these farmers' wives are under twenty-five years of age. The number of farmers' female relatives residing on the farm, including children, is stated at 92,187 in 1871, against 83,830 in 1861, and 105,147 in 1851. On the other hand, the female indoor farm-servants have fallen off from 99,156 in 1851, to 46,561 in 1861, and 24,599 in 1871. The rapid reduction of this class of female laborers shows that the proportion of farm-work performed indoors is annually decreasing. This fact is further evident from the marked decline in the number of indoor male laborers, which was 134,157 in 1871, against 158,401 in 1861, and 189,116 in 1851. But this is not all. The numbers of agricultural outdoor laborers, both male and female, have also declined. In 1851 the aggregate of this class was 952,997, of whom 908,678 were males and 44,319 were females; in 1861 the whole number was 958,265, 914,301 being males and 43,964 females. In 1871 the total was 798,087—764,574 males and 33,513 females. The rapid introduction of machinery, during the last decade, will account for this reduction in the amount of hand-labor on farms.

Another class of outdoor laborers is distinguishad from the foregoing. The shepherds numbered 12,517 in 1851, 25,559 in 1861, and 23,335 in 1871. Female shepherds appear for the first time in the last census, numbering 12. The class of farm-bailiffs, always males, rose from 10,561 in 1851, to 15,698 in 1861, and 16,476 in 1871. The land-agents or surveyors numbered 3,064 in 1851, 4,702 in 1861, and 4,810 in 1871; of the latter number 3 were females. Agricultural students, from 104 in

1851 to 490 in 1861, and 760 in 1871. Workers and proprietors of agricultural implements numbered 55 in 1851, 1,441 in 1861, and 2,160 (including 8 females) in 1871. The increase in this class marks not only the greater use of machinery, but also the investment of independent capital in an auxiliary branch of agricultural enterprise. In the land-drainage service there were only 11 returned in the census of 1851, against 1,761 in 1861, and 1,255 in 1871.

The census-commissioners notice "a noiseless but rapid increase in the number and proportion of women engaged in specific productive work." This increase is outside of the increased number of wives of the industrious classes. About 10 per cent. of the tenant-farmers are women, who are found in largest numbers in dairy and grazing counties, such as Derbyshire and Cheshire, where they are about one in seven.

The increase in the number of farm-bailiffs, land-agents and surveyors, and workers or proprietors of agricultural machinery, taken in connection with the decline of hand-laborers, shows an increase in the labor of direction and in skilled labor. Thus mind is relieving muscle of its heavier tasks, and elevating practical agriculture from the mechanical, abject thing it has been in the past to a dignified and intellectual calling.

CONSCRIPTION OF HORSES IN FRANCE.—The French government is now enforcing in all the departments the stringent law of August 1, 1874, in regard to the conscription of horses. All owners of horses and mules over six years of age are required to bring them before an itinerant board of examination on the first day of its session within their commune. Penalties for neglect of this requirement range from 50 to 1,000 francs. Those who knowingly make false declarations are fined from 200 to 2,000 francs. There is noticeable a general promptness in meeting this requirement on the part of horse-proprietors in France.

PHOSPHATES IN FRANCE.—The Academy of Sciences has awarded to M. de Molon the "Morogues" prize for his labors in regard to phosphates. After a summary of the rôle of phosphates in vegetation, and their influence upon the fertility of arable land, the learned statistician estimates at from 150,000 tons to 200,000 tons the weight of powdered mineral phosphates annually applied to the French farming-lands. The average price on delivery is 50 francs, or \$10 per ton. It is only since 1848 that efforts had been made in England to substitute mineral phosphates for bone as a fertilizer. M. de Molon has for many years been persistently urging the same agricultural improvement in France. In a paper read before the Academy in 1856, he pointed out the leading deposits, regularly stratified, abundant, and capable of easy working, in the departments of Ardennes, Meuse, Marne, Upper Marne, and Yonne. These deposits have since become the grand centers of French exploitation. These operations are now to be extended to other fields. Among the labors of M. de Molon was a map of the country, showing the location of the beds of mineral phosphates, the mills for pulverizing the material, together with the deposits of other valuable minerals. M. de Molon has also presented at each of the great expositions within twenty years collections of maps and specimens showing the location and character of these fossil phosphates. He has also been indefatigable in his efforts to induce French agriculturists to adopt this material as their chief reliance in fertilization. The great public benefit resulting from his labors was gracefully recognized by the Academy in awarding the prize founded by M. Morogues.

FOREST PRESERVATION IN EUROPE.—Responses to a circular from the foreign office to British diplomatic officials in various countries of Europe have been published recently, embracing an immense mass of information, showing the effect of the denudation of forest lands upon the climate and rain-deposit of the continent. The inundations which of late years have had such destructive sweep in Switzerland have roused both people and government to the necessity of saving the timber upon their mountain-slopes. A commission of experts, appointed by the federal government in 1858, showed up in a trenchant report the reckless prodigality with which the forests were destroyed. This awakened public attention to a growing evil, and efforts have been made, both by legal enactment and otherwise, to restrict the cutting of timber as well as to re-afforest the denuded areas. Austro-Hungary has about 19,000,000 acres capable of producing valuable timber, but it is gradually decreasing. About 31 per cent. of the country has remained under tree-culture, and in some provinces 50 per cent. But in other portions the destruction of forests has been so complete, that it is doubtful whether the land has not lost its tree-bearing qualities. The soil is generally unfit for the purposes of agriculture, and hence the destruction of the trees has condemned it to utter sterility, unless they can again be made to grow. The diminution of forest areas has already produced serious effects upon the climate, inducing long and destructive droughts, and exposing the lowlands to the blasts of the Carpathians. The towns and cities are made uncomfortable, if not intolerable, during large portions of the year, while pulmonary symptoms have alarmingly increased. The government, and many enlightened citizens, are making every effort to avert the further destruction of timber, and to encourage its replacement.

In Prussia, especially in the eastern provinces, all forest land is more or less under government control, and greater care of forest lands is exercised than perhaps in any other country. Strict precautions are taken to secure an annual replant fully equal to the area felled. Most of the large forests are mapped out, according to size, quality, and age of the trees. Sweden has 30,000,000 acres, or 42 per cent. of her area, in forest trees, mostly conifers. Of this surface, 5,000,000 acres are under governmental supervision, and the remainder in the hands of individuals or corporations, either by freehold or by lease from the crown. In this country, as also in Norway, the indiscriminate felling of timber has had an unfavorable effect upon the climate. The government finds great difficulty in treating the case by legislation, but its efforts in this direction have been warmly supported by intelligent and public-spirited individuals and corporations. Planting-schools and nurseries have been established, and many denuded districts have been re-afforested. The steady decline in the exports of timber show the necessity of such efforts, by revealing the extent of the evil they are attempting to relieve.

BRITISH TARIFF ON FRENCH WINES.—In reply to a request of the French government, the British Board of Trade sent special commissioners to the different wine-producing regions of France, in order to determine, by actual experiment, the alcoholic strength of each kind of wine, so as to discriminate in favor of the milder brands in the imposition of import duties. Of fifty-five different wines examined in 1862, eight contained of alcohol less than 10°·34 centesimals; forty-one, over 10·34, and less than 10°·94; six contained over 14°·94 and less than 22°·99. Wine-producers in Portugal and Spain, jealous of French producers, were pressing the British government to reconstruct its tariff-schedule so as to

make 12° centesimal the line of demarkation between weak and strong wines, instead of 14°, the standard now recognized. This would bring a larger number of the French brands within the denomination of strong-wines. The former are charged with a duty of 27.51 francs per hectoliter; the latter, 68.76 francs. The proposed change would then bring a larger number within the range of high-tariff charges, and render their competition with the Peninsular wines difficult, if not impossible.

HORTICULTURAL PRIZES.—The Massachusetts Horticultural Society offers a prize of \$25 for the best essay upon the culture and varieties of roses, to be read at the rose exhibition, June 17. Also similar prizes on grape-culture in gardens, &c., to be read October 9; on the culture of the cauliflower, &c., to be read November 6; on the principles of landscape gardening, &c., November 27. The essay on rose-culture must be submitted by the first Saturday in June; the others a month before the time of reading; essays unsigned, but accompanied by the name of the writer, must be sent to the committee on publication, Horticultural Hall, Boston. General competition invited.

WINE PRODUCTION AND CONSUMPTION IN FRANCE.—The *Moniteur Agricole*, from a study of official statistics, estimates the average annual yield of wine, in France, at 55,000,000 hectoliters, about equal to 1,453,000,000 gallons, wine measure. Of this amount, nearly 80,000,000 gallons are exported. The import from foreign countries amounts to about two-thirds of the export, making the amount of wine available for consumption in the country about 1,427,000,000 gallons. The average annual consumption of wine as a beverage was estimated at one hectoliter, or nearly 26½ gallons per capita, in 1860, when the Anglo-French treaty of commerce was signed. It is supposed to have increased 10 per cent. since that time, and now amounts to over 29 gallons per capita, making an aggregate total consumption of nearly 86,000,000 gallons. Leakage is estimated at 80,000,000 gallons, or about equal to the amount exported. About 265,000,000 of gallons are devoted to the distillation of brandy, and a considerable quantity used for miscellaneous purposes in the arts. Production and consumption are seen to balance each other with remarkable regularity upon a comparison of periods of twenty or thirty years, as these periods are generally sufficient to embrace the extreme vicissitudes of production, and to furnish a closely approximate annual medium. The outlook for the future seems to indicate no marked differences from the past.

FRENCH AGRICULTURE IN 1875.—A leading French agricultural writer demands greater progress during the coming year in the agricultural production of France, in order to secure an increased population and an enlargement of the stock of effective labor, of home consumption, and of foreign commerce; in fine, an increase of power all around. Leaving out the fruit and wine cultures of the center and south of France for future consideration, he directs special attention to the production of cereals and of foreign and industrial plants, occupying about 75,000,000 acres of the 125,000,000 within the French territorial dominion.

In the north are found the model agricultural regions of France. Here lands worth from 5,000 to 6,000 francs per hectare (\$400 to \$480 per acre) yield from 25 to 30 hectoliters of wheat per hectare, (28 to 34½ bushels per acre.) These lands are never fallowed, but subjected to a continuous rotation. The sugar-beet is the pivotal point in this system of culture, and some apprehension is expressed in regard to its excessive production. The increase of the sugar product of Germany and other countries is pre-occupying foreign markets, and narrowing the scope of profitable export-

tation by French producers. Its economic value to the industrial interest of France is incalculable, furnishing, as it does, not only the basis of a large manufacturing interest, but also a wide scope of employment for agricultural labor, and a large amount of nutriment for farm-animals. Those departments in which the sugar-beet has not yet become an essential point in the systems of rotation are expected to introduce it cautiously, with due regard to the economic reasons which have rendered it so effective in the north.

The model intensive culture of the north may be impracticable in other regions, at least under existing circumstances. Land worth only \$80 per acre will not remunerate the investment of working-capital that would be appropriate to land worth \$400 per acre. High-priced land near the market might easily be made to return from 10 to 15 per cent. upon a working-capital of \$80 per acre, while lands not so advantageously situated might return the same rate per cent. on \$8 per acre, with a cultivation embracing pasturage and fallow. A practical adaptation of methods to circumstances will regulate this matter. The extension of railways is enlarging the area that may be profitably subjected to high culture. If these new lands can be brought up to the standard of the north, the writer thinks that France will be able to sustain a population of 50,000,000.

An abundance of fodder-plants is an essential element in this increased production. In those departments in which this sugar-beet cannot be successfully grown, some adequate substitute must be found. In many localities the sugar-beet has failed merely from lack of knowledge and skill in its cultivation. Strong local preferences, often mere prejudices, are urged in behalf of different plants, such as the cabbage, the Jerusalem-artichoke, the potato, the carrot, the rutabaga, the turnip, the radish, &c. What is wanted is a predominant plant, assuring a regular abundance of stable-feed and of stable-manure; a plant capable of withstanding drought, and requiring only a moderate amount of hand-labor. The writer thinks that such a plant has been found in the maize, which promises especially to meet the necessities of those parts of the country which suffered most from the frosts of last May and the drought of the following summer. It will take the place of the sugar-beet in rotation, and will require from four to six tons of stable-manure per acre in the spring, besides a complementary fertilization of sulphate of ammonia and superphosphate of chalk at planting-time. The maize will have this advantage over the sugar-beet, that it will allow the substitution of horse-inplements for hand-labor. Irrigation in summer will increase the yield, but it can withstand the baleful influence of drought better than most other plants.

It is true that only some classes of lands are suited to maize, but well-chosen and well-treated land may be made to produce 35 tons of green fodder per acre, equivalent to 6 or 8 tons of dry hay, or three or four times the yield of meadow of average quality. It is doubtful whether the sugar-beet itself can rival such a yield of maize, which has also the advantage in cost, in resistance to drought, in adaptation to local circumstances, and in regularity of production. There are regions in which this crop with a high yield may be depended upon in a system of rotation, affording masses of fodder that could be obtained from no other plant. Profitable results from its cultivation have been realized by intelligent agriculturists. The writer insists that, in connection with cabbages, turnips, rag-grass, &c., it may be made profitably to occupy a large area of waste heather-land. In the South of France it will be of especial advantage, augmenting its live-stock production and its domes-

tic manures. If this plant is successfully introduced it will cause the productive power of the South to approximate, if not to equal, that of the North, and thus tend to equalize the economic advantages of the two sections.

An important problem, pressing for solution during 1875, is the increase of wages by the enlargement of forage-crops, requiring but little hand-labor and yielding grand returns of manure. Maize-fodder gives, per hectare, more than the sugar-beet. If the latter, by first yielding juice for sugar or alcohol, gives its residuum at less cost for cattle-feeding, it is no less true that the maize, less exacting of hand-labor, and more reliable in its productions, offers special inducements to the southern and central cultivators.

But other points in the productive question demand attention during 1875. Fertilizers, implements, enlarged machinery, live stock, irrigation, management of waters, and other themes, not only of discussion but also of practical experiment, will occupy the public mind.

PISCICULTURE IN FRANCE.—The fish-hatching establishment at Huningue, in the department of Upper Rhine, during the incubating season of 1873-'74 hatched out 7,883,000 eggs, of which 38 per cent. perished; 42 per cent. were sent abroad, and the remainder were retained at the establishment. The number of fish sent out to restock the rivers were as follows: to Germany, 2,359,000; Austria, 60,000; Holland, 600,000; Luxembourg, 90,000; France, 180,000; Switzerland, 100,000; Italy, 30,000; Brazil, 35,000. About 500,000 salmon and bastard salmon were placed in the Rhine, the Ill, and the Moselle. Very satisfactory experiments have been made in the lakes of Pomerania, Silesia, and Brandenburg.

INTERNATIONAL SERICULTURAL CONGRESS.—The committee on organization of this body has published a circular indicating points desirable to illustrate by experiment prior to its fifth session at Milan, Italy, in 1876. The experiments reported at previous sessions have generally been too fragmentary and disconnected, and not capable of being co-ordinated in general results. In order to render such experiments capable of effective comparison it is necessary that the conditions and circumstances be, as nearly as possible, identical. To aid in securing this uniformity the circular sets forth several points of guidance for the experiments to be carried on by parties interested during the period intervening before the session of the Milan congress. These points embrace, first, circumstances influencing the health of the silk-worm in the course of rearing, and in the confection and preservation of eggs. Rearing includes breeding, type, and its modification by heat, moisture, light, aeration, and other influences affecting the health of worms normally incubated from well-preserved eggs. Special attention is directed to the effects of mulberry-leaves gathered fresh, but wet with copious rains, especially during the fifth age and at the time when the worms are about to spin their cocoons. It is especially desirable to experiment upon the character and prevention of the disease known as *flacherie*. Where worms are infected with this malady they should be separated from the healthy ones and divided into classes according to the degree of development of the symptoms, and each class studied separately. In regard to the confection of eggs, it is desirable to ascertain how far parentage is a good criterion of selection, and how far some breeds excel others in their capacity to resist *flacherie* or other diseases. These experiments should all be made upon old breeds producing yellow cocoons.

The second branch of inquiry refers to the influences which cause the hatching of the eggs before the regular time, such as artificial hibernation, rubbing with brushes or other bodies, solid or fluid; exposure to thunder-storms or currents of electricity. The extent and intensity of these influences should be carefully determined.

The third general inquiry refers to the terminology of diseases affecting the silk-worm. An effort will be made to settle upon a system of synonyms of the names of diseases in different languages.

Persons desiring further information should address "Comité d'organization du V Congrès Bacologique, Musée Civique, Milano, Italy."

CAUSE AND CURE OF HARD TIMES.—Our correspondent in Howard County, Arkansas, reports that destitution, bordering on starvation, prevails in that section. The immediate cause stated is the severe drought of last season, but the want of ability to bridge over such emergencies, without great suffering, is ascribed to two causes more under human control. The first is a prevalent habit of lazy loafing, in place of industry and consequent thrift, among the farming population. The time which ought to be devoted to vigorous work in improving the soil and cultivating good crops is spent, the greater part, in hanging around public houses and other places of common resort, and the less part in farming in the most superficial, slipshod, and slovenly manner. Second, cotton and corn are almost the only crops cultivated. One consequence is that not only the community at large, but the farmers themselves, are dependent for meat, bread, and other agricultural supplies for home consumption on *purchase* from abroad; so that when the cotton and corn crops fail they have no supplies of their own production, and nothing to buy with. Diversified agriculture and industry in pursuing it are the very obvious remedies suggested.

RYE FROM THE DEPARTMENT.—Our correspondent in Washington County, Vermont, reports that six quarts of winter-rye, received from this Department, and sown on sandy soil, produced six bushels of excellent grain.

YIELD OF BUTTER BY A JERSEY COW.—Our correspondent in Washington County, Vermont, reports that, in the ten months following April 4, 1874, a Jersey cow, owned by Mr. Nathan Skinner, of Plainfield, yielded 503½ pounds of butter, besides milk and cream for two persons. Two quarts of meal per day were fed to her, and, after the 1st of September, two quarts of bran in addition.

WHEAT IN TEXAS IN 1875.—A correspondent in Dallas County reports that, in that and the adjoining counties, the acreage in wheat has been largely increased, and that the prospect of a good crop is very favorable. He estimates the acreage in Dallas at 50,000, and that "a fair yield" would be 750,000 bushels. This, at his estimate of population, 40,000, would furnish 18¾ bushels for each individual. He states that there are, in Dallas City, milling capacities for working about 340,000 bushels per annum into flour. After reserving sufficient flour for home consumption, and wheat for seed, there would be about 40,000 barrels of the former and a large surplus of the latter for outside markets.

OATS FROM THE DEPARTMENT.—Our correspondent in Benton County, Oregon, reports that Mr. John Burnett received from this Department two pounds of "Early Fallow" oats, which were sowed, about the 10th of May, on a plat of new-prairie soil (70 feet by 12) thoroughly prepared but not manured. They ripened as soon as common varieties

sown a month earlier. The yield was over 150 pounds—more than 75 fold—of sound, clean oats. The berry is plump, but not extra large; the hull transparent and thin; and in bulk the oats weigh little less than wheat.

AGRICULTURE AMONG THE CHOCTAWS.—Our correspondent in the Choctaw Nation, Indian Territory, reports that there is great suffering in that tribe for want of food. The Indians “worked pretty faithfully” last year, but the extremely wet spring necessitated late planting, and this, followed by an early drought, made very short crops inevitable. In many localities there is no breadstuff attainable, and many hundreds are living on meat alone. They began to prepare their grounds and put in their seed as early as practicable this season, and are doing what they can to guard against a repetition of the famine they are now suffering. Our correspondent, who has been a missionary among them for eighteen years, says:

I have ever taught the Christian Indians that *they* should be models to all the others; that the Christian religion should cause them to become more industrious, intelligent, and refined, with better houses, larger farms, and more stock, than when they were in their wild state. I often go into their fields with them, encourage and advise them as to work, and exemplify the manner of doing it. Have often begged seeds from the States to distribute among them, have helped cultivate them in their gardens, and even showed them how to cook the vegetables raised from them.

EXCESSIVE RAIN-FALL.—A correspondent at Baton Rouge, La., sends to this Department a record of the rain-fall at that point, covering March and April. In March the aggregate depth of rain, falling in ten distinct storms, was 8.7 inches; in April, 6.6 inches, falling in six storms; total for the two months, 15.3 inches.

A HARD FREEZE.—Our correspondent in Russell County, Kentucky, reports that “the cold snap” on the 16th and 17th of April was so unprecedentedly severe as to do great damage, not only to the crops, but to forest-trees. He states:

The very heavy bloom on our white-oak and beech trees is all killed and the timber greatly injured. The tops of most of the ash, white-oak, beech, and hickory trees, and many branches three inches in diameter, are killed. In the tops of three-fourths of them there are no signs of vitality.

AVERAGE WEIGHT OF FLEECES.—The following statements are from our correspondent in Sangamon County, Illinois: From a flock of 87 merinos, the greater part pure bred, were clipped 841 pounds of unwashed wool; average per head, 9.67 pounds. Ten or twelve of the sheep were bucks, some of which yielded 17 to 19 pounds. Another farmer clipped from 3 pure-bred Cotswold ewes 34 pounds; and another from 4 high-grade merino ewes, 21 pounds. The fleeces from the 94 sheep averaged 9.52 pounds of unwashed wool per head.

FRUITFUL IN CLOVER AND CHERRIES.—A correspondent in Augusta County, Virginia, reports that the section between Staunton and Lexington, embracing parts of Augusta and Rockbridge Counties, is remarkably adapted to the production of clover and cherries. Within an area not exceeding ten miles square, over 500 bushels of clover-seed were produced last year. Ox-heart cherry-trees, some of which are found 2 feet in diameter, are so abundant that, when loaded with ripe fruit, they are often cut down as a convenient way of gathering it.

COMMERCE IN RICE.—The records of commerce and navigation show a marked decrease in the exports of rice, which have been about one-fifth as large in the past four years as in a similar period prior to 1870—

the recent average being less than a half-million pounds per annum. In 1861 the export exceeded 81,000,000 pounds. The average import of the past four years has been 74,000,000 pounds; of the four years preceding, 50,000,000 pounds. The records are as follows:

Years.	Domestic exports.		Foreign exports.		Imports.	
	Pounds.	Value.	Pounds.	Value.	Pounds.	Value.
1871	445,842	\$22,502	10,212,920	\$280,463	64,655,827	\$1,876,786
1872	403,835	22,768	12,651,959	378,996	74,642,631	2,317,172
1873	276,637	19,740	20,202,774	591,417	83,755,225	2,304,696
1874	553,922	27,075	25,840,377	763,497	73,257,716	2,083,248

A PROMISING GRASS.—Our correspondent in Jefferson, Ala., sends a description of a grass which made its appearance in that county, on the Little Capuba River, and “is new to all who have seen it.” It was discovered two years ago. It spreads rapidly on bottom-lands, but not on upland. Last year, T. K. Truss sowed one acre in wheat on rich bottom-land in the Cahaba Valley. After the wheat was gathered, the land not being plowed, this grass came up spontaneously. In the autumn he cut and baled it, and sent it to a commission-merchant in Birmingham. The bill of sale was as follows: 20 bales of hay, 5,466 pounds, \$104.76; expenses, \$12.55; net profit, \$92.21. “As to the quality of the hay, it is pronounced by livery-stable men equal to timothy.” Our correspondent stated that with this report he forwarded a specimen of the seed and a stalk of the grass, measuring 9 feet in length; but these have not been received.

ORANGE-BLIGHT.—A lady in the parish of Terre Bonne, Louisiana, reports a remedy for orange-blight, which she supposes to be identical with that described on page 200 of the Annual Report of this Department for 1873. It had been her former practice to have the earth raised up around her orange-trees. For years they have been dying by slow degrees, and many were quite dead. The leaves would first turn yellow, and then the limbs would gradually wither and die. Various remedies were tried in vain, until a faithful servant heard certain creoles describing their process of preventing the blight, and reported the same. He was commissioned to carry it into effect, and did, as follows: In January he cleared away all the grass within 2 or 3 feet of the trees, and dug among the roots, leaving some of them exposed to the air and sun. The result is that all the trees have improved. The living parts have leaved out in full, have bloomed freely, and appear to be in vigorous health. On one tree, which bore only two oranges last year, and which was so nearly dead as to be thought beyond recovery, each live branch has put out the richest green leaves and is in full bloom.

WOOL-GROWING IN CALIFORNIA.—The following table, prepared by E. Grozer, represents the shipments of wool from San Francisco for the last two years. It indicates the rapid increase of wool-growing in California, and the large dimensions it has already reached. That industry

s at present making healthy progress, not only in extent of production but in improved grades of sheep, qualities of wool, and yield per head.

Years.	Pounds.	Value.	Years.	Pounds.	Value.
1854.....	175,000	\$14,000	1865.....	6,549,931	\$1,334,425
1855.....	360,000	36,000	1866.....	4,662,129	897,938
1856.....	600,000	80,000	1867.....	7,057,631	1,143,571
1857.....	1,100,000	165,000	1868.....	13,225,181	2,436,594
1858.....	1,424,551	190,969	1869.....	13,747,791	2,370,165
1859.....	2,378,250	356,738	1870.....	19,238,000	3,655,000
1860.....	3,055,325	397,198	1871.....	22,064,638	6,067,772
1861.....	3,721,998	507,297	1872.....	24,578,989	7,450,000
1862.....	5,090,300	1,668,087	1873.....	29,238,376	6,450,300
1863.....	5,268,480	1,225,151	1874.....	36,088,701	8,182,000
1864.....	5,935,670	1,254,778			

AMERICAN COTTON IN INDIA.—The Bombay Chamber of Commerce reported, concerning New Orleans seed, grown in the Dharwar district, a staple of good color and fair length, fine and silky, but deficient in strength as compared with the Hingunghat and the better kinds of Oomrastee. Later experiments in other districts are adverse to the further use of American seed. Ryots are no longer urged to cultivate it, and there is less disposition to experiment with it.

Cotton experiments have been conducted for several years on the government farms in Berar with New Orleans, Sea Island, Egyptian, Peruvian, and Pernambuco seed, with unpromising results in all cases, the "Dharwar acclimatized New Orleans" succeeding better than the others. The natives took a fancy to this sort, and in 1872 the cultivation had extended to 3,534 acres. But the result of this extension was not favorable; while thriving on the hills south of Berar and at the foot of the Souptura range on the north, on the low-lying black soils the crop generally proved a failure, dampening the ardor of the natives for its further cultivation.

A BETTER SYSTEM WANTED.—The secretary of a farmers' club in Benton County, Arkansas, writes as follows:

Horses are thin, owing to shortness of last year's corn-crop, with no grass, clover, hay, or anything else to fall back upon, except corn in shock half rotted. This system of farming is our leading one, and is slowly but certainly leading us to ruin. But it is beginning to take a new turn. The Department has done much for us in disseminating practical information on a better system of agriculture, through the annual and monthly reports, though thousands fail to appreciate or even to read them.

GREAT RUIN OF GRAIN-CROPS.—The secretary of the Loami Farmers' Club, Sangamon County, Illinois, reports that in that county the rye has been about all killed, and the winter-wheat to a very wide extent, by late unpropitious spring-weather. He states that thousands of acres will be plowed up and put in corn, spring-wheat, and oats. "The early-sown was killed the worst, the late broadcast-sown the least."

THE WINTER IN WISCONSIN.—Our correspondent in Douglas County reports that between the first of November and the last of March, at Superior, the mercury fell below zero on eighty different days. The like has not occurred there before within the last nineteen years. The snow was not excessive until the 15th of March, when a depth of 18 to 24 inches on a level fell.

INDIGENOUS PLUMS.—Our correspondent in Martin County, Minnesota, writes:

Wild plums of many varieties are cultivated with success here. If they are not better than the eastern tame plums, they constitute an excellent substitute for them. They are used

for pies, puddings, sauce, and preserves. Farmers' wives often scald and put down from one to three barrels for common table-use, and so far as I know, they keep good until they are used up. I have known them to be good in the spring after they were put up. From the time they are nearly ripe, children are allowed to eat them at will, at least after the first few days. They are considered a very sure cure for summer-complaints.

RAIN-FALL EXTRAORDINARY.—A correspondent in Juab County, Utah, reports that the prospect for all kinds of crops is very bright in that county, and that with less than usual labor. Writing May 26, he says:

For the last five or six weeks we have had rain about every seven or eight days, which is something wonderful in this part of the world. The farmers are looking cheerful, and well they may, as it relieves them of a great amount of labor in irrigating, and thus gives them time for other important work. The season is all of a month in advance of that of last year.

FIELD-PEASE AS A FERTILIZER.—A planter in Montgomery County, Alabama, reports that last year he sowed cow-pease freely between the rows in a field of corn. A drought came on before the pease matured and so dried the vines that they died. These he covered by turning two furrows between the rows. This spring, cotton planted on that field is far superior to that on other parts of his plantation. From the results, thus far apparent, he judges the pea-vines equal to a coat of guano in fertilizing value.

MARKET PRICES OF FARM-PRODUCTS.

May and June, 1875.

The following quotations represent the state of the market, as nearly as practicable, at the beginning of the month.

Articles.	May.	June.
NEW YORK.	Price.	Price.
Flour, superfine State and western..... per barrel.	\$4 60 to \$4 90	\$4 70 to \$5 00
extra State..... do...	5 05 to 5 50	4 95 to 5 50
extra to choice western..... do...	5 05 to 8 25	4 95 to 8 25
common to fair southern extras..... do..	5 10 to 5 75	5 00 to 5 90
good to choice southern extras..... do...	5 20 to 8 25	5 95 to 8 25
Wheat, No. 1 spring..... per bushel.	1 27 to 1 31	1 12½ to 1 16½
No. 2 spring..... do...	1 19 to 1 23	1 07 to 1 12½
winter, red, western..... do...	1 33 to 1 42	1 22 to 1 32
winter, amber, western..... do...	1 33 to 1 42	1 22 to 1 32
winter, white, western..... do...	1 40 to 1 45	1 25 to 1 33
Rye..... do...	95 to —	1 10 to —
Barley..... do...	1 28 to 1 45	nominal.
Corn..... do...	91 to 93½	73 to 81
Oats..... do...	72½ to 78½	69 to 75
Hay, first quality..... per ton.	17 00 to 20 00	16 00 to 21 00
second quality..... do...	12 00 to 13 00	13 00 to 14 00
Beef, mess..... per barrel.	9 50 to 10 50	18 00 to 19 00
extra mess..... do...	10 50 to 12 00	— to —
Pork, mess..... do...	22 25 to —	20 70 to 20 75
extra prime..... do...	16 50 to 17 50	15 37½ to 15 75
prime mess..... do...	19 75 to 20 00	18 75 to —
Lard..... per pound.	15¾ to —	13¾ to 14¾
Butter, western..... do...	12 to 17	14 to 24
State dairy..... do...	15 to 28	16 to 28
Cheese, State factory..... do...	14 to 16½	10 to 12½

Market-prices of farm products—Continued.

Articles.	May.	June.
NEW YORK—Continued.		
Cheese, western factory..... per pound	\$0 12 to \$0 15 $\frac{1}{2}$	\$0 10 to \$0 12
Cotton, ordinary to good ordinary..... do...	13 $\frac{3}{4}$ to 15 $\frac{1}{2}$	13 $\frac{1}{2}$ to 15 $\frac{1}{4}$
low middling to good middling..... do...	15 $\frac{3}{4}$ to 17 $\frac{1}{2}$	15 $\frac{1}{4}$ to 17
Sugar, fair to prime refining..... do...	8 $\frac{1}{2}$ to 8 $\frac{1}{4}$	8 $\frac{1}{6}$ to 8 $\frac{1}{2}$
Tobacco, lugs..... do...	9 $\frac{1}{2}$ to 13	9 $\frac{1}{2}$ to 13 $\frac{1}{4}$
low leaf to medium leaf..... do...	12 $\frac{1}{2}$ to 17	12 $\frac{1}{2}$ to 17
Wool, American XXX and pick-lock..... do...	57 to 62	57 to 62
American XX and X..... do...	48 to 55	50 to 55
American combing..... do...	54 to 63	54 to 65
pulled..... do...	30 to 50	30 to 48
California spring clip..... do...	24 to 34	22 to 35
California fall clip..... do...	16 to 24	16 to 24
BOSTON.		
Flour, western superfine..... per barrel.	4 50 to 4 75	4 25 to 4 75
common western extras..... do...	5 25 to 5 75	5 00 to 5 50
red wheat, good to fancy northwestern..... do...	5 50 to 8 50	5 50 to 8 50
white wheat, good to fancy western..... do...	6 00 to 8 00	6 25 to 8 25
southern family..... do...	6 50 to 8 00	7 00 to 8 50
Corn..... per bushel.	92 to 95	82 to 85
Oats..... do...	72 to 77	73 to 78
Rye..... do...	1 20 to 1 25	1 15 to —
Barley..... do...	1 00 to 1 40	nominal.
Hay, eastern and northern..... per ton.	16 00 to 22 00	16 00 to 23 00
choice western..... do...	— — —	— — —
Beef, mess..... per barrel.	— — to 10 50	— — to 10 50
extra mess..... do...	— — to 13 00	— — to 13 00
Pork, prime..... do...	17 50 to 18 00	17 00 to 17 50
mess..... do...	22 50 to 23 00	21 50 to 22 00
Lard..... per pound.	16 to 16 $\frac{1}{2}$	15 $\frac{1}{2}$ to 16
Butter, New York and Vermont..... per pound.	16 to 23	15 to 26
western..... do...	15 to 22	14 to 18
Cheese, New York and Vermont factory..... do...	14 $\frac{1}{2}$ to 16 $\frac{1}{2}$	10 to 12 $\frac{1}{2}$
western factory..... do...	14 to 16 $\frac{1}{2}$	9 to 12 $\frac{1}{2}$
Sugar, fair to good refining..... do...	8 $\frac{1}{4}$ to 8 $\frac{1}{2}$	8 to 8 $\frac{1}{4}$
Cotton, ordinary to good ordinary..... do...	14 to 15 $\frac{1}{4}$	13 $\frac{1}{4}$ to 15 $\frac{1}{4}$
low middling to good middling..... do...	16 $\frac{1}{2}$ to 17 $\frac{3}{4}$	15 $\frac{3}{4}$ to 17
Wool, Ohio and Pennsylvania..... do...	52 to 56 $\frac{1}{2}$	50 to 57
Michigan..... do...	48 $\frac{1}{2}$ to 52 $\frac{1}{2}$	45 to 52
other western..... do...	44 to 49	45 to 50
pulled..... do...	24 to 57 $\frac{1}{2}$	25 to 55
combing-fleece..... do...	39 to 70	60 to 70
California..... do...	16 to 22	14 to 36
PHILADELPHIA.		
Flour, superfine..... per barrel.	3 75 to 4 25	4 25 to 4 50
Pennsylvania, extra to choice..... do...	4 25 to 6 00	5 00 to 6 25
western, extra to choice..... do...	5 50 to 6 25	5 50 to 6 25
Wheat, white..... per bushel.	1 40 to 1 50	1 35 to 1 42
amber..... do...	1 32 to 1 36	1 32 to 1 36
red..... do...	1 30 to 1 34	1 30 to 1 34
Rye..... do...	1 05 to 1 08	1 10 to 1 12
Barley..... do...	Nominal.	Nominal.
Corn..... do...	88 to 90	81 to 84
Oats..... do...	69 to 77	67 to 71
Hay, prime baled..... per ton.	22 00 to 24 00	24 00 to 25 00
baled, common to fair shipping..... do...	20 00 to 22 00	22 00 to 23 00
Beef, western mess..... per barrel.	7 00 to 9 00	7 00 to 8 00
extra mess..... do...	8 00 to 9 00	8 00 to 9 00

Market-prices of farm products—Continued.

Articles.	May.	June.
PHILADELPHIA—Continued.		
Beef, Warthman's city family.....per barrel..	\$16 00 to — —	\$16 00 to — —
Pork, mess.....do.....	22 50 to \$23 00	20 50 to \$21 00
prime mess.....do.....	20 00 to — —	17 50 to — —
prime.....do.....	16 50 to 17 00	15 00 to 15 25
Lard.....per pound..	16 $\frac{1}{2}$ to 19 $\frac{1}{2}$	15 to 18 $\frac{1}{2}$
Butter, choice Middle State.....do.....	27 to 30	25 to 29
choice western.....do.....	27 to 28	22 to 23
Cheese, New York factory.....do.....	16 to 17	10 to 12 $\frac{1}{2}$
Ohio factory.....do.....	15 to 16 $\frac{1}{2}$	11 to 12 $\frac{1}{2}$
Sugar, fair to good refining.....do.....	8 $\frac{1}{2}$ to 8 $\frac{3}{4}$	8 $\frac{1}{2}$ to 8 $\frac{3}{4}$
Cotton, ordinary to good ordinary.....do.....	13 $\frac{3}{8}$ to 15 $\frac{1}{2}$	13 $\frac{3}{8}$ to 15 $\frac{1}{2}$
low middling to good middling.....do.....	16 to 17 $\frac{1}{2}$	16 to 17 $\frac{1}{2}$
Wool, Ohio X and XX.....do.....	51 to 55	50 to 55
other western.....do.....	45 to 53	45 to —
tub-washed.....do.....	54 to 70	55 to 57
pulled.....do.....	27 to 47	38 to 52
combing.....do.....	46 to 71	42 to —
BALTIMORE.		
Flour, superfine.....per barrel..	4 25 to 4 75	4 50 to 4 75
extra.....do.....	5 00 to 5 50	5 00 to 5 75
family and fancy.....do.....	6 00 to 8 50	5 75 to 8 25
Wheat, red.....per bushel..	1 30 to 1 40	1 20 to 1 32
amber.....do.....	1 42 to 1 44	1 34 to 1 37
white.....do.....	1 44 to 1 50	1 30 to 1 38
Rye.....per bushel..	1 15 to 1 17	1 14 to 1 22
Oats.....do.....	68 to 78	69 to 75
Corn.....do.....	86 $\frac{1}{2}$ to 92	73 to 89
Hay, Maryland and Pennsylvania.....per ton..	16 00 to 24 00	21 00 to 24 00
Pork, mess.....per barrel..	23 00 to — —	21 50 to — —
extra prime.....do.....	17 00 to — —	17 00 to — —
Lard.....per pound..	16 $\frac{1}{2}$ to 17	15 $\frac{1}{2}$ to 17
Butter, western.....do.....	11 to 26	13 to 27
eastern.....do.....	15 to 28	18 to 28
Cheese, western factory.....do.....	14 $\frac{1}{2}$ to 16	11 to 12
eastern factory.....do.....	15 to 17	13 to 14
Sugar, fair to good refining.....do.....	8 $\frac{1}{2}$ to 8 $\frac{3}{4}$	8 $\frac{1}{2}$ to 8 $\frac{3}{4}$
New Orleans and grocery grades.....do.....	— — to — —	— — to — —
Tobacco, lugs.....per cental..	9 50 to 14 00	8 00 to 12 00
leaf, common to medium.....do.....	11 00 to 14 50	12 00 to 14 50
Cotton, ordinary to good ordinary.....per pound..	14 to 15	— — to 14 $\frac{3}{4}$
low middling to good middling.....do.....	15 $\frac{1}{2}$ to —	15 $\frac{1}{2}$ to 15 $\frac{3}{8}$
CINCINNATI.		
Flour, superfine.....per barrel..	5 25 to 5 50	4 80 to 5 05
extra.....do.....	5 75 to 6 00	5 15 to 5 30
family and fancy.....do.....	6 00 to 7 00	5 50 to 7 00
Wheat, winter red.....per bushel..	1 32 to 1 35	1 20 to 1 25
hill (amber).....do.....	1 35 to 1 38	1 25 to 1 30
white.....do.....	1 35 to 1 40	1 23 to 1 35
Rye.....do.....	1 20 to 1 22	1 15 to — —
Barley.....do.....	1 35 to 1 60	1 45 to 1 55
Corn.....do.....	73 to 77	71 $\frac{1}{2}$ to 74
Oats.....do.....	66 to 69	63 to 67
Hay, baled, No. 1.....per ton..	20 00 to 23 00	18 00 to 20 00
lower grades.....do.....	15 18 to 18 00	15 00 to 17 00
Beef, plate.....per barrel..	— — to — —	— — to — —
Pork, mess.....do.....	22 00 to 22 50	20 00 to 20 50
Lard.....per pound..	15 $\frac{1}{2}$ to 17	13 $\frac{1}{2}$ to 16 $\frac{1}{2}$

Market-prices of farm products—Continued.

Articles.	May.	June.
CINCINNATI—Continued.		
Butter, choice.....per pound..	\$0 27 to \$0 30	\$0 22 to \$0 25
prime.....do.....	18 to 22	18 to 22
Cheese, prime to choice factory.....do.....	13 to 14	10½ to 11
Sugar, New Orleans, fair to good.....do.....	8½ to 8¾	8½ to 8¾
prime to choice.....do.....	9½ to 9¾	9½ to 9¾
Tobacco, lugs.....do.....	10 to 12½	10½ to 12½
leaf.....do.....	15 to 20	15 to 20
Cotton, ordinary to good ordinary.....do.....	13½ to 14¾	12¾ to 14
low middling to good middling.....do.....	15½ to 16½	14¾ to 15¾
Wool, fleece, common to fine.....do.....	43 to 45	43 to 45
tub-washed.....do.....	43 to 46	— to —
unwashed clothing.....do.....	30 to 32	30 to 31
unwashed combing.....do.....	36 to 38	38 to 40
pulled.....do.....	35 to 36	35 to 38
CHICAGO.		
Flour, choice winter extra.....per barrel..	5 50 to 7 00	7 00 to 8 00
common to good, ditto.....do.....	5 00 to 5 25	6 00 to 6 75
choice spring, ditto.....do.....	5 00 to 5 25	5 50 to 5 25
patent spring.....do.....	6 00 to 9 00	6 75 to 8 00
spring superfine.....do.....	3 75 to 4 25	3 50 to 4 00
Wheat, No. 1 spring.....per bushel..	1 09 to —	94½ to 98½
No. 2 spring.....do.....	1 04 to 1 05½	91 to 93
No. 3 spring.....do.....	93 to 99¼	83 to —
Rye, No. 2.....per bushel..	1 09 to —	1 02 to 1 03
Barley, No. 2.....do.....	1 30 to 1 32	1 20 to 1 23
Oats, No. 2.....do.....	62 to 62¾	57½ to 58½
Corn, No. 2.....do.....	76 to 76½	62½ to 64
Hay, timothy.....per ton..	16 00 to 19 00	18 50 to 21 00
prairie.....do.....	8 50 to 15 00	12 00 to 13 00
Beef, mess.....per barrel..	8 25 to —	8 50 to —
extra mess.....do.....	9 25 to —	9 50 to —
Pork, mess.....do.....	21 95 to 22 05	19 95 to 20 00
prime mess.....do.....	19 90 to —	— to —
extra mess.....do.....	15 75 to —	15 00 to 15 25
Lard.....per pound..	— to 15¾	— to 14½
Butter, choice to fancy.....do.....	25 to 31	24 to 30
medium to good.....do.....	17 to 20	18 to 22
Cheese, good to prime factory.....do.....	16½ to 17	11 to 12
Sugar, New Orleans, common to choice.....do.....	7½ to 9	— to —
Wool, tub-washed.....do.....	45 to 58	— to —
fleece-washed.....do.....	40 to 50	43 to 45
unwashed.....do.....	27 to 37	25 to 34
pulled.....do.....	42 to 47	— to —
country.....do.....	— to —	35 to 36
SAINT LOUIS.		
Flour, winter, common to choice.....per barrel..	5 75 to 6 75	4 75 to 7 75
spring, common to choice.....do.....	5 40 to 6 00	4 50 to 5 50
Wheat, winter, white.....per bushel..	1 30 to 1 32	1 30 to 1 32
red.....do.....	1 20 to 1 40	1 14 to 1 38
spring.....do.....	1 00 to 1 12	95 to 1 07
Corn.....do.....	70 to 84	64 to 78
Rye.....do.....	1 03 to 1 10	1 03 to 1 10
Barley.....do.....	1 32½ to 1 37½	1 25 to 1 50
Oats.....do.....	60 to 68	60 to 68
Hay, timothy.....per ton..	19 00 to 23 00	19 00 to 23 00
prairie.....do.....	13 00 to 15 00	13 00 to 15 00
Beef, mess.....per barrel..	14 00 to 15 00	14 00 to 15 00
Pork, mess.....do.....	21 00 to 22 00	21 00 to 22 00
Lard.....per pound..	12 to 14	12 to 14
Butter, prime to choice dairy.....do.....	27 to 28	27 to 28

Market-prices of farm products—Continued.

Articles.	May.			June.		
SAINT LOUIS—Continued.						
Butter, country packed.....per pound.	\$0 15	to	\$0 20	\$0 15	to	\$0 20
Cheese, Ohio factory.....do.....	13	to	13½	13	to	13½
New York factory.....do.....	13	to	13½	13	to	13½
Cotton, ordinary to good ordinary.....do.....	12½	to	14½	12½	to	14½
low middling to good middling.....do.....	15	to	16½	16	to	16½
Tobacco, lugs.....do.....	10	to	12	10	to	12
case to medium leaf.....do.....	11	to	13	11	to	15
Wool, tub-washed.....do.....	53	to	55	53	to	55
fleece-washed.....do.....	32	to	52	32	to	52
unwashed.....do.....	23	to	36	23	to	38
NEW ORLEANS.						
Flour, superfine.....per barrel.	5 25	to	5 50	5 25	to	—
extra.....do.....	5 75	to	6 37½	5 37½	to	6 25
family and fancy.....do.....	6 50	to	7 25	6 50	to	7 50
Corn, yellow.....per bushel.	86	to	87	—	to	83
white.....do.....	86	to	88	86	to	88
Oats.....do.....	73½	to	75	72	to	73
Hay, choice.....per ton.	26 00	to	23 00	—	to	—
prime.....do.....	24 00	to	24 50	25	to	26 50
Beef, Texas.....per barrel.	10 00	to	11 50	10 00	to	11 50
western.....do.....	14 00	to	16 00	16 00	to	—
Fulton Market.....per half barrel.	11 40	to	11 50	11 50	to	12 50
Pork, mess.....per barrel.	23 00	to	23 25	21 00	to	21 50
Lard.....per pound.	15	to	16½	15	to	16
Butter, choice Goshen.....do.....	30	to	33	33	to	—
western.....do.....	15	to	20	30	to	33
Cheese, choice western factory.....do.....	—	to	16	8	to	14
New York cream.....do.....	18	to	18½	18	to	—
Sugar, fair to fully fair.....do.....	8½	to	8¾	8	to	9
prime to strictly prime.....do.....	9	to	—	9½	to	9½
clarified, white and yellow.....do.....	9¾	to	9¾	9¾	to	10½
Tobacco, lugs.....do.....	9	to	12	9	to	12
low leaf to medium leaf.....do.....	12	to	14½	12	to	14½
Cotton, ordinary to good ordinary.....do.....	13½	to	14¾	13	to	13½
low middling to good middling.....do.....	14½	to	16½	14¾	to	15¾
Wool, clear lake.....do.....	30	to	33	—	to	—
SAN FRANCISCO.						
Flour, superfine.....per barrel.	4 00	to	4 35	4 00	to	4 25
extra.....do.....	4 50	to	4 80	4 50	to	4 75
family and fancy.....do.....	5 00	to	5 50	5 00	to	5 50
Wheat, California.....per cental.	1 60	to	1 85	1 60	to	1 75
Oregon.....do.....	1 60	to	1 80	1 60	to	1 75
Barley.....do.....	1 00	to	1 75	1 35	to	1 60
Oats.....do.....	2 10	to	2 25	1 90	to	2 25
Corn, white.....do.....	1 55	to	1 60	1 55	to	1 60
yellow.....do.....	1 50	to	1 55	1 50	to	1 52½
Hay, State.....per ton.	12 00	to	18 00	10 00	to	16 00
Beef, mess.....per barrel.	8 50	to	9 50	8 50	to	9 50
family mess.....per half barrel.	6 50	to	8 00	6 50	to	8 00
Pork, mess.....per barrel.	22 00	to	23 00	22 00	to	23 00
prime mess.....do.....	16 50	to	18 00	16 50	to	18 00
Lard.....per pound.	14	to	16½	14	to	16½
Butter, overland.....do.....	20	to	25	20	to	25
California.....do.....	25	to	32½	25	to	32½
Oregon.....do.....	20	to	22½	20	to	22½
Cheese.....do.....	12½	to	16	12½	to	15
Wool, native.....do.....	10	to	20	10	to	15
California.....do.....	15	to	25	15	to	26
Oregon.....do.....	18	to	25	18	to	26

LIVE-STOCK MARKETS.

Articles.	May.	June.
NEW YORK.		
Cattle, extra beeves.....per cental..	\$13 25 to \$13 75	\$13 25 to \$13 50
good to prime.....do....	11 75 to 13 00	12 00 to 13 00
common to fair.....do....	10 75 to 11 50	10 25 to 11 75
average of the market.....do....	11 25 to — —	11 75 to — —
Texans.....do....	Nominal.....	9 00 to 12 25
milk-cows.....per head..	40 00 to 70 00	50 00 to 90 00
	5 50 to 7 00	4 50 to 5 25
Sheep.....per cental..	5 00 to 8 00	5 25 to 7 00
Swine.....do....	None on sale.	None on sale.
PHILADELPHIA.		
Cattle, prime beeves.....per cental..	8 00 to 8 12½	8 00 to 8 50
fair to good.....do....	6 50 to 7 75	6 25 to 8 00
common.....do....	4 50 to 6 00	5 00 to 6 00
Sheep.....do....	5 00 to 8 00	4 50 to 5 75
Swine, corn-fed.....do....	11 00 to 13 50	11 50 to 12 50
BALTIMORE.		
Cattle, best beeves.....per cental..	6 75 to 7 50	6 25 to 7 50
first quality.....do....	5 50 to 6 75	5 25 to 6 25
medium or good quality.....do....	5 00 to 5 50	4 75 to 5 50
ordinary.....do....	4 00 to 5 00	4 50 to 4 75
general average.....do....	6 37 to — —	6 37 to — —
most of the sales.....do....	6 00 to 7 00	5 75 to 7 00
milk-cows, fair to good.....per head..	30 00 to 48 00	30 00 to 45 00
Sheep.....per cental..	4 50 to 7 50	4 00 to 5 50
Swine.....do....	10 00 to 11 50	10 00 to 10 75
CINCINNATI.		
Cattle, good to prime butchers' steers...per cental..	6 00 to 6 50	5 75 to 6 50
fair to medium.....do....	5 00 to 5 75	4 50 to 5 50
common.....do....	3 75 to 4 75	3 50 to 4 00
milk-cows.....per head..	30 00 to 55 00	25 00 to 55 00
calves.....per cental..	5 50 to 7 00	4 00 to 6 00
Sheep.....do....	5 50 to 6 75	3 25 to 5 00
Swine, good to choice.....do....	8 00 to — —	7 30 to 7 50
common to medium.....do....	7 00 to 7 60	6 90 to 7 20
CHICAGO.		
Cattle, extra graded steers, 1,400 to 1,600 pounds, per cental.....	6 30 to 6 75	6 40 to 6 60
choice beeves, 1,250 to 1,450 pounds, per cental.....	6 00 to 6 20	6 00 to 6 25
good beeves, 1,150 to 1,350 pounds, per cental.....	5 50 to 6 00	5 75 to 5 90
medium, 1,100 to 1,250 pounds, per cental..	5 50 to 5 75	5 25 to 5 60
inferior.....do....	3 50 to 5 50	2 50 to 3 25
Texans.....do....	3 00 to 5 75	3 00 to 4 50
milk-cows.....per head..	25 00 to 45 00	— — to — —
Sheep.....do....	3 00 to 6 50	3 50 to 5 75
Swine.....do....	7 00 to 8 75	6 25 to 7 35
SAINT LOUIS.		
Cattle, fair to choice native steers.....per cental..	4 50 to 6 75	4 50 to 6 75
common to fair natives.....do....	3 25 to 4 75	3 25 to 4 75
inferior to common.....do....	1 50 to 2 87½	1 50 to 2 87½

Live-stock Markets—Continued.

Articles.	May.	June.
SAINT LOUIS—Continued.		
Cattle, Texans, common to choice per cental..	\$2 00 to \$4 25	\$2 50 to \$4 25
Sheep do.....	3 75 to 6 25	3 75 to 6 25
Swine do.....	to 8 00	6 60 to 8 00
Horses, plug.....per head..	40 00 to 75 00	40 00 to 75 00
plain do.....	80 00 to 110 00	80 00 to 110 00
street-car.....do.....	75 00 to 125 00	75 00 to 125 00
heavy draught.....do.....	130 00 to 170 00	130 00 to 170 00
good drivers.....do.....	100 00 to 150 00	100 00 to 150 00
extra do.....	175 00 to 180 00	175 00 to 180 00
Mules, 14 to 15 hands high.....do.....	75 00 to 120 00	75 00 to 120 00
15 to 16 hands high.....do.....	120 00 to 180 00	120 00 to 180 00
extra.....do.....	175 00 to 180 00	175 00 to 200 00
NEW ORLEANS.		
Cattle, Texas beeves, choice.....per head..	40 00 to 46 00	40 00 to 46 00
first quality.....do.....	30 00 to 35 00	30 00 to 35 00
second quality.....do.....	20 00 to 25 00	20 00 to 25 00
Western beeves.....per cental..	3 00 to 7 50	— — to — —
milch-cows.....per head..	35 00 to 100 00	35 00 to 100 00
calves.....do.....	7 00 to 9 00	7 00 to 9 00
Sheep, first quality.....do.....	6 00 to 7 00	6 00 to 7 00
second quality.....do.....	3 00 to 4 00	3 00 to 4 00
Swine per cental..	5 00 to 8 50	5 00 to 10 00

FOREIGN MARKETS.

WHEAT.—The season, in the United Kingdom, has shown great variation of temperature. About the middle of May, in some parts of England, the thermometer in the sunshine indicated 110 degrees, but this was followed by cutting breezes and a furious hail-storm. Several portions of France complained of drought, though of late rains have become more abundant. In northern Europe the rain-fall has been plentiful. Markets in Belgium and Holland show a disposition to weaken, but Germany and Russia show no change. Commercial authorities in Europe were puzzled at the apparently inconsistent advices from America. The ravages of grasshoppers in the wheat-producing regions of the West did not raise the price above 46s. 6d. per quarter, including cost and insurance, while California promised to outdo even her previous export. Sellers in London markets had become indifferent about accepting current rates, and a general impression was felt that prices would not fall any further. British wheat was offered in Mark Lane in but moderate supplies. The sales of English wheat in the kingdom, during the last week in May, amounted to 51,278 quarters at 42s., against 42,822 quarters at 62s. 4d. during the corresponding week of 1874. The London averages were 44s. or 1,749 quarters. The imports into the kingdom during the third week in May were 968,260 cwts. Fair arrivals of foreign were noted during the following week. The show of fresh samples from the neighboring counties of England was meager, but showed a good condition of the grain. The demand for "English qualities" was very small, and foreign was also very inactive.

Holders in French provincial markets had demanded an advance, but there was a determined resistance on the part of buyers. During

the last week in May, 21 French markets showed a tendency to advance. 66 were calm or firm, and 27 showed a declining tendency. In Paris holders asked full prices. The trade was quite animated at Marseilles, one day sales amounting to 19,000 quarters. Most of the European markets showed a calm state of the trade.

In Mark Lane, London, Essex and Kent, white brought 43*s.* to 47*s.* per quarter; ditto, red, 41*s.* to 43*s.*; Norfolk, Lincolnshire, and Yorkshire red, 41*s.* to 43*s.*; off foreign wheats. Dantzic mixed was quoted at 49*s.* to 53*s.*; Königsberg, 45*s.* to 52*s.*; Rostock, 44*s.* to 47*s.*; Silesian red, 42*s.* to 44*s.*; ditto, white, 45*s.* to 48*s.*; Pomerania, Mecklenberg, and Uckermark, 43*s.* to 45*s.*; Ghirka, 41*s.* to 42*s.*; Russian hard, 39*s.* to 42*s.*; Saxonska, 42*s.* to 44*s.*; Danish and Holstein red, 40*s.* to 45*s.*; American red, 40*s.* to 42*s.*; Californian, 46*s.*; Chilian white, 45*s.*; Australian, 47*s.* to 48*s.*

In Liverpool, American white wheat brought 9*s.* 2*d.* to 9*s.* 6*d.* per cental; ditto, No. 1 spring, 8*s.* 9*d.* to 9*s.* 1*d.*; ditto, No. 2 spring, 8*s.* 4*d.* to 8*s.* 7*d.*; Canadian white, 9*s.* 2*d.* to 9*s.* 6*d.*; ditto, red Club, 9*s.* to 9*s.* 2*d.*; Egyptian, extra Saidi, 8*s.* to 8*s.* 3*d.*; Californian, average, 8*s.* 11*d.* to 9*s.* 1*d.*; ditto, Club, 9*s.* 3*d.* to 1*s.* 5*d.*; Oregon, 9*s.* 4*d.* to 9*s.* 6*d.*; Chilian, 8*s.* 9*d.* to 8*s.* 11*d.*

At Paris white sorts were quoted at 40*s.* to 45*s.*; red, 36*s.* to 43*s.* 4*d.* At Marseilles Danube wheat brought 38*s.* 8*d.*; Berdianski, 31*s.* 75*d.*; Ghirha, 43*s.* 6*d.*; Marianopoli, 46*s.* 5*d.* At Bordeaux the best white wheat still commanded 44*s.* At Brussels, native wheat, 47*s.*; foreign, 46*s.*; Hambro, wheat firm at 40*s.*; Berlin, 40*s.*; St. Petersburg, 42*s.* 6*d.*

FLOUR.—The last week of May, in Mark Lane, London, opened upon moderate supplies of English flour, with small foreign stocks, yet the trade in Norfolk brands was quite heavy, with a downward scale of prices. Foreign was sold only in small lots to retail buyers. The Paris market was firm, with an upward tendency. In Liverpool, flour was considerably neglected, though quotations remained unchanged. In Mark Lane the best town households brought 36*s.* to 40*s.* per sack of 280 pounds; best county households, 30*s.* to 31*s.*; Norfolk and Suffolk, 28*s.* to 29*s.*; American flour, 21*s.* to 24*s.* per barrel. At Liverpool, English and Irish superfines brought 35*s.* to 32*s.* per 280 pounds; ditto, extra, 32*s.* 6*d.* to 34*s.*; French, 35*s.* to 43*s.*; Trieste, 48*s.* to 60*s.*; Spanish, 38*s.* to 39*s.*; Chilian, 30*s.* 6*d.* to 32*s.* 6*d.*; Californian, 33*s.* 6*d.* to 34*s.* 6*d.*; American Western and extra State, 21*s.* to 22*s.* per barrel; Baltimore and Philadelphia, 21*s.* to 23*s.*; Ohio and extra, 22*s.* to 26*s.*; Canadian and extra, 21*s.* to 23*s.* 6*d.* At Paris, prices for consumption ranged from 31*s.* 6*d.* to 34*s.* 7*d.* per 280 pounds.

MAIZE.—In Mark Lane, white brought 32*s.* to 34*s.* per quarter. In Liverpool, American, 30*s.* to 34*s.* per 480 pounds; Galatz, 32*s.* 6*d.* In Paris it sold in small lots at 40*s.* to 41*s.* per quarter.

